

# SUPPLEMENT.

# The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

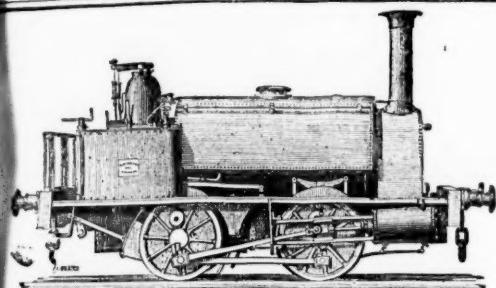
FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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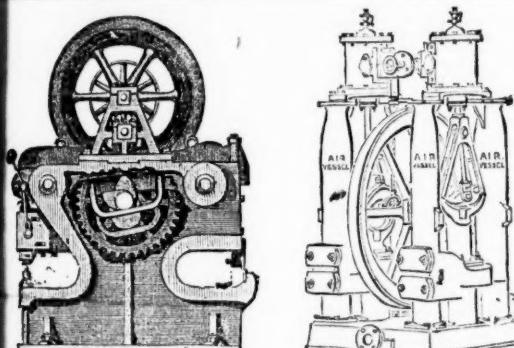
No. 2018.—VOL. XLIV.

LONDON. SATURDAY, APRIL 25. 1874.

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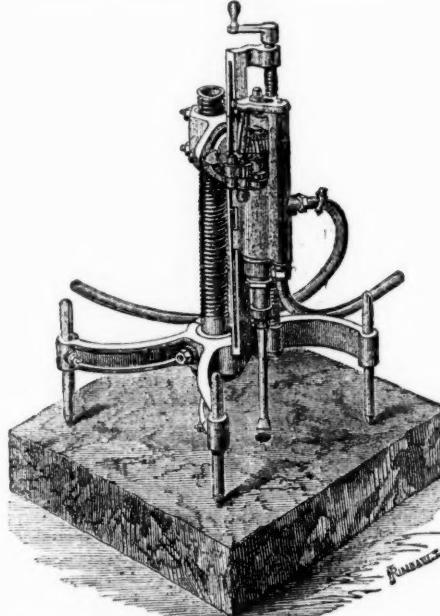


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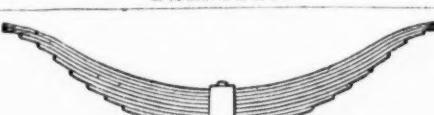
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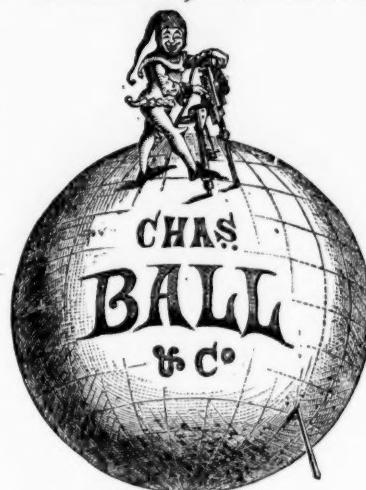
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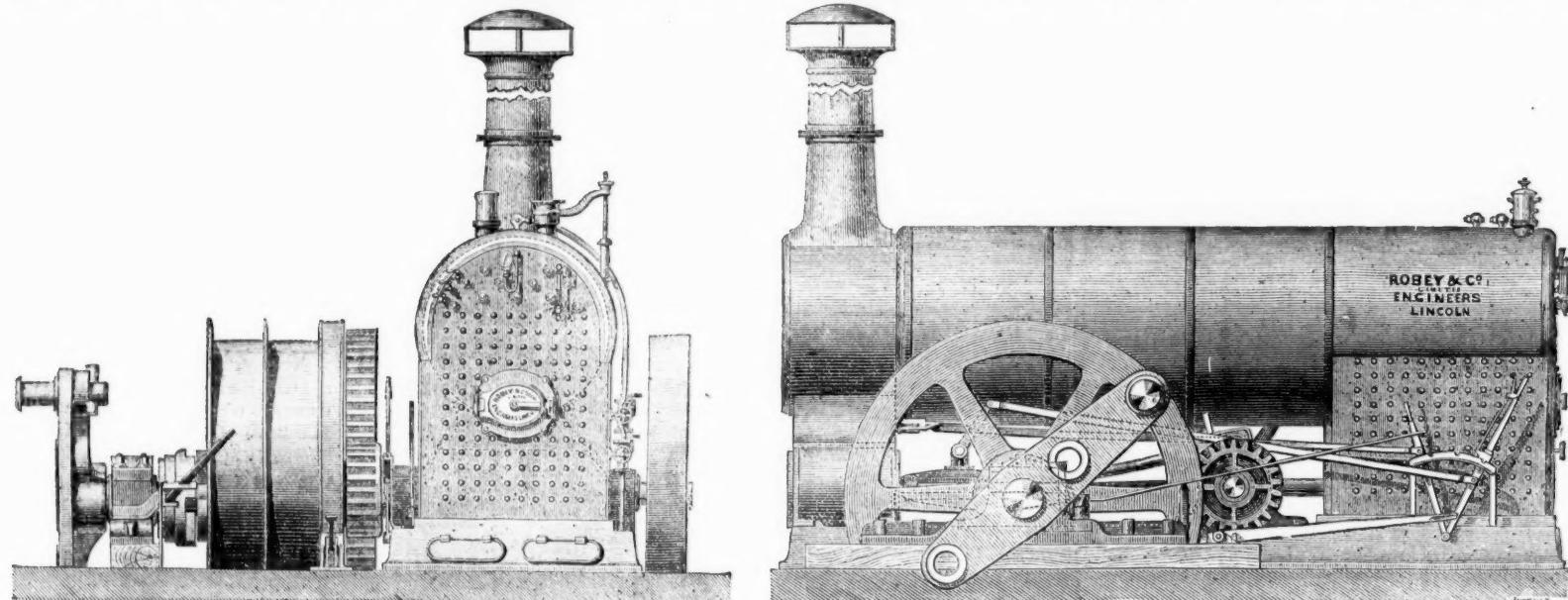
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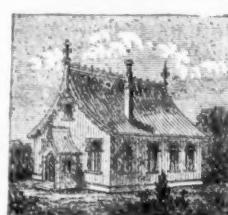
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DRAWINGS AND ESTIMATES ON APPLICATION





alone an ample and extended arena for the exercise of intellect for vast gains and profits. It is true that several of these companies have advanced in value, yet there is wide scope for selection, with evident chances of early profits. The sensational decline in value consequent on importation of Australian tin has effected great and important changes in Cornwall. Seton, North Roscar, Great Vor, North Croft, Margaret, Providence, Wheal Owles, the Boscombe Downs, and other large and deep undertakings, have either succumbed or greatly restricted their operations, hence the "output" will be greatly diminished, and thus the supply and demand more equally equilibrated. Again, the production of Australia will necessarily partake of a spasmodic character, and it is not improbable, from recent advices that the product for time will materially fall off, while the application of the metal in manufacture and varied absorption will partake of a greatly extended consumption should ruling quotations continue. Why should not Germany and the Swiss Cantons adopt a tin carriage instead of that of nickel if it can be obtained at prices suitable to their purpose, and far more durable and economical in manufacture and use? This is a subject that engrosses at present considerable discussion, and may end highly satisfactory to the Cornish miner. Therefore, *nil desperandum* should be the watchword of all. It is within my recollection when Doulton, Cook's Kitchen, and North Roscar were the only important mines at work in the Carn Brea district, while it may be stated it required all the successes at Tresavean and the Gwennap Mines to dispel the gloom, which led to the resuscitation of the Croftys, Carn Brea, and Tincroft. The present bears no comparison with the depression so generally prevailing at the epoch to which I refer, while again the contraction of labour constitutes a favourable element in the future of Cornish mining.

There are incipient signs of improvement in many respects, and it is a source of congratulation that the number of young progressive undertakings upon which time and money have been expended far outstrip any other period within our recollection, while in Devonshire, especially in the neighbourhood of Dartmoor, rich and shallow veins have lately been discovered that cannot fail well to repay any capital that can practically be required in development.

At Bampfylde the cross-cut at the 70 ft. level has reached the north lode, which yields rich grey copper ores of a high percentage. This is an important discovery, as it leaves backs of 40 fms. high, wholly unwrought, under the deepest point of the old workings, and from which in ancient times vast quantities of ores were returned. This lode traverses the company's concession for fully two miles, and as no additional machinery will be required in drainage the value of the copper mines will become doubly enhanced. The iron and manganese mines belonging to the property yield equally well with former notices, and as the quantities at surface are computed to be worth 15,000*l.*, and the reserves are rapidly augmenting, this undertaking must be regarded as an accomplished fact. The second dividend, making 20 per cent. for the year, has been declared, while the future is fraught with promise. At St. Agnes Consols and Wheal Kitty the prospects are good, and many another mine could be enumerated which space precludes a further reference to on this occasion.—32, Fleet-street, April 18. R. TREDINICK,

Dealers in Stocks and Shares.

#### CORNISH MINING.

SIR.—The staple enterprise of the county has undergone a favourable change, much to the satisfaction of all interested; the improvement, however, is not likely to stop here, for yesterday prices for tin were in excess of the official quotations. Already in one district alone (Cumbernaid) the market value of the mines has gone up something like 150,000*l.*, which is proof that whatever disparaging accounts we may read of this industry the general public have every confidence in it when legitimately carried out. There are other districts that have not yet participated in the welcome rise, but must immediately follow, more particularly districts having shallow mines and little water to contend with. I strongly recommend all my friends to go into mines of this class in preference to any others, and to studiously avoid schemes having for their object the putting of a large amount of money into the pockets of so-called promoters; this species of mining has proved very detrimental to the interests of the county. People go into mines of this class at a high premium, and in a short time find the shares at about 50 per cent. discount; things go on from bad to worse, when by-and-by they find that the remnant of the capital called up has been all spent in developing the resources of the sett; the major portion of the capital gone, of course, into the pockets of promoters, then the cry is, I have lost my money in Cornish mining which is not the case. The writer can name many a mine that has tided over the late calamitous depression which must shortly considerably rise in value, and that the present is a favourable opportunity for the investor, provided he makes a judicious selection, there cannot be two opinions.

Unfortunately, the public, in a great measure, run too much after schemes where the purchase money is put down at a high figure, the immense premium charged for the property being a sort of decoy duck, for if any reasonable amount were charged for a mine the public would not look at it, as they value the property according to the price charged—the celebrated Wheal Emma and other Californian mines to wit. Had but a small portion of the useless expenditure in such concerns been spent in proving the new ground of this county the result would have been less need for emigration, greater success to the shareholders, and better times for "One and All."—St. Day, Cornwall, April 22. CHARLES BAWDEN.

#### CARN BREA AND TINCROFT.

SIR.—Although several communications have appeared in your Journal and other papers devoted to mining matters referring to some remarks of mine on the financial position of Tincroft and Carn Brea at their last general meetings, I do not find that my figures have been refuted, or that my statement that both these mines were heavily in debt, notwithstanding the declaration of dividends, is proved to be untrue. I infer, therefore, that my figures are correct, and I think it is admitted by disinterested parties that there is but little doubt that a most discreditable system of issuing accounts has been shown up. Your correspondents, "A. R. O." and Mr. Tredinnick (I am in doubt whether the two letters are not from the same pen), are certainly down on me for my expression of opinion, and offer of advice to investors (which by-the-bye I still adhere to), but, like others, they do not appear to attack my figures or to pretend to show that I am in error so far as they are concerned. "A. R. O." apparently seems only to jeer at my efforts to bring about a better state of affairs; however, it amuses him and does not hurt me—so there is not much harm done either way. "A. R. O." asks why are leading mines selected as the recipient of voluntary aid? The answer is, because they as leading mines should set such an example as may be well followed by others holding a less important position as mining investments.

I cannot myself see how any comparison can be drawn between the two mines referred to and South Frances, the former being in debt to the tune of thousands, and increasing that debt by the payment of dividends, and the latter charging up costs and bills, and making calls to liquidate those liabilities, and so establishing their position in the list of *bona fide* investments. Which is the most honest course to pursue I must leave for others to judge. If Carn Brea and Tincroft were to follow in the footsteps of South Frances I fancy the result would be that to meet the balance against the Carn Brea adventurers, as shown in my letter of Feb. 11, a call of *at least* 5*l.* per share would have been requisite, and to meet the balance against Tincroft Mine a call of nothing less than 25*s.* per share. These facts are almost too plain to admit of denial. I was somewhat surprised to hear, a short time since, that a gentleman holding the position of confidential agent or manager to one of the largest and most respected firms in the county was the deputed auditor to these two mines—Tincroft and Carn Brea.

As I am no doubt rightly informed, I cannot help making the remark that it is past my comprehension that anyone with a character at stake, and with a thorough knowledge of mining accounts in all its branches, should be so misguided as to permit such statements as were issued to the adventurers to pass as correct, as he must know very well their tendency to delude and deceive the

shareholders, and I should have thought his position would have placed him far above reproach. I am not aware that I have ever as yet questioned the ability of Capt. Teague as a miner or as surface manager, but I cannot, and will not, admit that his mode of preparing accounts is in accordance with the usages and customs laid down by the Statuary Court for the guidance of miners, or that they are likely to improve his standing with those who have hitherto placed their confidence in him as the nominal trustee for the time of their property. Outside adventurers, satisfied, no doubt, with their quarterly dividends, and placing confidence in a name, are possibly mute to the real state of the affairs of the concern in which their money is invested, and it is only through the press that they can be enlightened, and made acquainted with the many dangers with which they may be surrounded.

T. B. LAWS.  
28, Cornhill, April 28.

#### LEAD MINING IN CARDIGANSHIRE.

SIR.—It is always a source of pleasure to be in a position to forward you anything cheering from this district, which for so many years has proved so productive and profitable, and which may yet be considered as only in its infancy. About 35 years ago I recollect the selling of what is termed the Potter's lead, which contained a certain quantity of silver, varying from 3 to 12 ozs. to the ton of lead, at from 8*l.* 10*s.* to 11*l.* per ton; and many, very many, thousands of tons of this metal were sold at or below the former price, the latter being considered as really very good indeed. At the time I mention the Goginan silver ore, and the mines in the silver district, containing from 30 to 40 ozs. of silver per ton of lead, was sold at from 13*l.* 15*s.* to 15*l.* 15*s.* per ton. At the former thousands of tons were sold, and the latter looked upon as rather an exorbitant price. What the profits of the lead smelters then engaged in buying these ores were it would be useless to go into, and we will content ourselves by the more pleasing reflection that this mode of treating the miners, or, rather, the shareholders, in these and other lead mines, led to better things, and that, although this state of carrying on the sale and purchase of the ores continued for a great number of years, it has ceased to be so for many years past.

We may here, however, just give a glance in passing at the cause of the extreme low price obtained at the time I have stated, and which opened the eyes of the blind to a better state of things. When the Potter's ore was fetching from 8*l.* 10*s.* to 11*l.* per ton, and the silver ore from 13*l.* 15*s.* to 15*l.* 15*s.*, it was always considered that up to a certain quantity of silver, ranging from 8 to 12, and even up to 15 ozs. in the ton of lead, would not pay for desilverising, believing, in reality, that these amounts of silver were lost to the smelters, or that, if obtained, the cost of extracting was greater than the profit; and the most important fact was forgotten and overlooked altogether—that by the smelters purchasing a certain quantity of silver ore, containing from 30 to 100 ozs., by mixing these ores together not only would all the silver be extracted, but the Potter's lead, being of a softer nature, would also act as a flux for the harder, or steel-grained, silver ore.

All this having been put right we have had no reason to complain of prices, the Potter's lead for some years past having realised from 14*l.* to 15*l.* per ton, whilst the silver ores, which were sold at from 13*l.* 15*s.* to 15*l.* 15*s.*, have been realising from 18*l.* to 21*l.* per ton. Neither have we at the present moment reason for complaint, but for congratulation, seeing that prices for lead ore (Potter's) are bringing from 13*l.* to 14*l.* per ton, and the silver ore alluded to from 18*l.* to 20*l.*, whilst the price of tin ore has dropped from 80*l.* to below 50*l.*, and the standard for copper from 140*l.* to 95*l.*

During the past 30 years the parties mining in this district have had to lay out large sums of money for making water-courses to the different mines, extending almost from the very top of Plynlimon to the sea, for working the properties by water machinery, and for making large reservoirs, so as to ensure a continual supply of water all the year round. As the last instance of this, I may name the Powell Consolidated Mines, where, up to the last few months, the pumping, drawing, and crushing were done by means of a steam-engine, and the carriage from Aberystwith, between 11 and 12 miles, and freight from South Wales, with extra charges, of themselves were sufficient to drown the profits of a moderately small concern. The management of these mines having gone into other hands, arrangements were made for bringing in an abundant supply of water for working them, and this was soon accomplished, and there is now a powerful and good water-wheel 40 ft. in diameter and 4 ft. breast pumping, crushing, and drawing, instead of that most expensive machine—the steam-engine. I might add many reasons for the employment of water-power where it can be obtained, in not only the saving of a great expense, but that of husbanding our supply of coals for future generations, as well as by obtaining a greater quantity than is really required, causing extravagant wages to be demanded by the colliers, and thus causing the most unpleasant business which is now existing between masters and men. Let us hope soon that by economising fuel, and by carefully attending to the resources which may be obtained by any other means, a better state of things will soon take place.

I intend in my next letter to point out the very important results that must accrue, not only to the Powell Consolidated Mines by the bringing in of the water stated, but to every other mine in that district now at work, and waiting to be worked, the latter of which I shall give some particulars of, for, I hope, the benefit of some spirited company who may feel inclined to invest capital in the county. In concluding this letter, I would say it is with great pleasure, after having been underground at Powell Consolidated on Friday last, that they are opening out in whole ground in the 72, on the richest course of lead ore now working in the county.

Goginan, Aberystwith, April 21. ABSALOM FRANCIS.

#### MINING IN MONTGOMERYSHIRE.

SIR.—Permit me to lay before your readers a few facts relating to mining in this district. It is needless to say anything about the great leviathan of the district—i.e. the Van. The quantity of lead and blende vomited forth from the bowels of this mine is very great at present, but likely to be enormous eventually, while Van Consols are gradually and steadily opening up rich ore-paying ground. Indeed, this is likely to be one of the best mines in Wales for productivity, while they have spared no expense in erecting the most modern and complete ore-dressing machinery, but why the shares should be quoted as low as 4*l.* is quite a mystery, but I suppose it is not always the richness or poorness of a mine that governs the price of the shares, but other oracles quite apart from the intrinsic value of the mine. Hence, the shares in some fine things in this district may be often found selling at a premium, whereas the whole mine at the same time is not even a cent.

Some fine discoveries have recently been made in the old Dylife, which is likely to prove a rich mine again, especially if the drivages are continued of the different ends, but not without, not by packing the men off a heap just in the one place. The produce of the Dylife lead ore has been undoubtedly considerably greater than all the other lead-mines of Montgomeryshire put together so far, having been worked for many ages past; therefore, it can easily be supposed that the Dylife Mine has been worked to a considerable depth, and the ground for the most part has been all taken away from that depth up to surface by former workers. It is the opinion of practical miners in this neighbourhood, that the levels were discontinued, and the drivages persevered with, new bunches or deposits of ore would be discovered, and in ground which would be whole right up to surface. Immediately to the west, and adjoining the Dylife and on the same lode, we have the old Dyffrynwg, once a very rich mine, and I was informed when in the neighbourhood that it was about to be re-worked, it was thought, with vigour once again. In fact, the Dylife district is quite a mineralised country, and for a circumference of at least six miles round the Dylife are to be seen some of the finest outcrops of lodes at surface that could by any possibility be discovered in any portion of the United Kingdom; indeed, I seldom or ever saw such strong gossany backs of lodes cropping out at surface as some of these are, especially at the Cefn Hafod and South Dylife Mine, a new mine now been opened, and about 1½ miles south from the old Dylife. Here I found they were driving four adit levels, three going west into a very high hill from the side of the river: I went into two of them, and those two different lodes I never saw prettier, or as I should think more congenial for making lead ore. I thought the continuous branch of carbonate of lime along the footwall side in the adit level driving on one of those lodes was the finest and kindest matrix I had ever seen for lead. There can be in the mind of any competent miner no manner of doubt that those lodes upon which they are driving now at Cefn Hafod are large deposits of lead ore; the lodes are large, strong, and well defined, in precisely the same kind of rock and stratification as the Van and Dylife lodes; and it is to a wise selection of these young and new mines, such, for instance, as the one just referred to, that home adventurers must look forward to (although I understood the above mine is the property of a private party) in this country, for many of the old ones, though they have been strong and vigorous, many of them in their day having produced much wealth, are now, to many of them unfortunately, getting into the sere and yellow leaf. There are some other young things in this country, or rather district that are promising well, while there are other young things, if I may so term them, that are not worth the paper it would take to write their names upon.

About two miles south of Cefn Hafod and South Dylife Mine, on the side of the Severn river, is the Nant-y-Ricket Copper and Lead Mine, a mine that was the sole discovery, and opened to begin with, by the same person as is now opening up Cefn Hafod, Capt. Price. At Nant-y-Ricket they have a very fine lode of a high percentage copper at present in the adit level on the No. 1 lode; indeed, they appear to have gone through a long run of copper in this level, scarcely any of which has been stopped away, and not gone through it, for, in fact, it is still in the end quite as strong as ever. There can be no doubt but when this level on this No. 1 lode is driven into the strength of the hill, the probability is that fine deposits of lead ore will be met with; and from a conversation I had with the discoverer of the lodes, Capt. Price, some two years ago, such is also his opinion; and that, moreover, at certain depths below the base of the hill the copper will die out, and lead replace it. Indeed, in the level driven on the No. 2 lode the copper has died out completely some time, and fine silver lead is now beginning in this level to show itself, as they are proceeding more into the strength of the hill. But before this mine is fairly opened up both these adit levels, one on each of these two greatest master lodes, must be driven considerably further into the hill before great results can be expected, and an engine shaft sunk between both the lodes, as they run parallel, so as to be able to intersect both lodes by cross-shafts in depth, say, at the 20, 30, 40, 50, and 60 fms. levels. This done, and Nant-y-Ricket would vie with any mine in the kingdom. It is one of the finest mineral properties in Wales, and the manner in which Capt. Grenfell is working it, with the resources at his command, does him much credit.

About two miles east of Nant-y-Ricket is Gwestyn Consols; here they have the Great Van lode, and are now driving an adit to intersect it; and under the management of a man so long and intimately acquainted with that property as Capt. Pearce, it will not be surprising if something very good should be heard of at Gwestyn Consols some day.—Llandudno, April 22.

VERITAS.

#### REMARKS ON THE "ORIGINAL CORRESPONDENCE" IN THE SUPPLEMENT TO LAST WEEK'S "MINING JOURNAL."

SIR.—"The Richmond Mining Company:" Mr. J. D. Powers' letter seems to be a personal attack on Mr. Emersley, who gives us a temperate and judicious letter, apparently showing very accurately the position of the Richmond, and the erroneous calculations of mining experts and professors, whether they have studied under Dana, or jumped into their profession without such scientific preparation. Calm, reasonable, and correct statements do not, however, fit the mining men of Nevada, hence Mr. Emersley must be written down unless he learns to estimate values at about five times greater than they are to suit that particular school.

"Mining on the Pacific Coast:" That the mines are as productive as Mr. James P. Clough has shown we do not dispute, but would be glad to see a few more of the benefits transferred to this side, whence so much capital has been drawn to work them.

"The Gold Industry of Nova Scotia:" "Acadiensis" has given us a long letter to prove that this is little or no value. This much vaunted gold field has yielded in 13 years 911,000*l.*, over an extent of territory of 300 miles in length, embracing 13 districts. To this result five mines have contributed 300,000*l.*, leaving 611,000*l.* for all the other mines in the province. Sherbrooke has been given as the district most systematically developed, and here 21 companies have produced an aggregate of 225,000*l.*, more than all of which has been swallowed up in the cost of production. It would be an interesting enquiry how much capital has been expended in the production of this 911,000*l.*, and how many millions sterling more would be required to raise another 900,000*l.* worth of gold. The lodes are said to be 1 ft. and under in width; we believe that a large number are under. Contrast this with the Pacific Coast, where, according to Mr. Clough, we have two mines, each of which has paid in dividends in one year a larger amount than the whole of the Nova Scotian yield has been for 13 years.

We pass over some letters which are not of general interest, and notice "Kalesia Gas," which appears to us to offer an escape from some of the miseries inflicted by the recent combinations of colliers, and hail it as a stop in advance.

Mr. N. Ennor writes a series of letters, abusing everybody as usual, and among others we have come in for a share of this gentleman's kind remarks. This does not altogether satisfy him, as he threatens us with a dire vengeance when he comes closer on us. Mr. Ennor has already, on more than one occasion, been too close with us for his own convenience, and, probably, he may meet again with similar disappointment. Our object is not to attack anyone, but we cannot avoid making remarks when people will write nonsense, which seems to be one of Mr. Ennor's qualifications. Let Mr. Ennor write judiciously, as he can, and sometimes does, and we should not so often to visit him with reproach.

"Australian Tin Mines:" "Caution" has hit the mark respecting these forthcoming Tasmanian prospectuses. If tin exists there in such quantities as represented the people in the colony are quite equal to working it themselves, while, if not, we shall be favoured with the privilege of subscribing capital to pay heavy premiums on extensive grants.

READERS OF THE "MINING JOURNAL."

SIR.—Having only just seen the Journal of April 4, I again reply to "Unity," who has written a first-class letter as regards language, and one cannot help admiring his ease of composition, and the spontaneous outburst with which he gives vent to his thoughts, but the mission of the letter is not, like Armstrong's guns, to protect, but, like the "Prussian needles," to oppress. "Unity," in his letter, says "These reasons, upon just examination, are irrefutable," having to labour many fathoms under the surface, aided by the light of a "flickering candle," it is not to be wondered at if our natural sight should be impaired, and as there is a connecting link between the mind and the body the intellectual must also suffer. Will "Unity" kindly give a list of these "irrefutable" arguments, as the writer candidly admits that his calibre and mental faculties have only seen but one, as previously stated. Do not think the following egotistical. Although a miner, yet feel confident I could prepare the accounts for a mine meeting without "bamboozling" or leading the adventurers through long winding labyrinths of inextricable mazes, as so frequently happen at our accounts. Does not "Unity" know that if there is a debt side thirteen time-a-year there is also a credit side? Not being in the prophetic line, I shall not express an opinion relative to whether the four-weeks system "will be injurious," but every miner in Cornwall will stake the consequences just now. The wish is father to the thought" in your case undoubtedly.

Again, "Nothing short of rendering accounts upon the calendar monthly basis can give proper satisfaction," not knowing much about the commercial world, with the exception that very many accounts are rendered "satisfactory," and the balance struck "pro or con," only once in six months.

"Unity" says that "The adventurers must be consulted." The miners throughout Cornwall would hail with delight and enthusiasm the advent of a distant shareholder, and would acquiesce with anything which he would propound orally. I believe (although I trust not) the day is distant, as, whilst standing on the mountain of expectation, we see no rays of association from the Oriental sun of mining emporium to dispel the foul and loathsome clouds of unpleasantry and discontent, and to scatter broadcast the ambrosial, refreshing, and cheering beams of sociality and intercourse which would inevitably be conducive to prosperity and success in Cornish mining.—Camber, April 22.

TROON INSTITUTE.

TO THE READERS OF THE "MINING JOURNAL."

I am no packman, nor connected with them, either directly or indirectly, and shall not attempt to reply to such extraneous matter from the real point. To use the words of an ancient, "If an ass kicks me must I return it?" I am a miner, and am sorry that not an able pen has been wielded to chronicle our grievances and regret of the ability when I have attempted to give a verdict concerning the question at issue. In replying to "Readers" last year on this point, I told them it was easy to make an assertion but difficult to substantiate it. I suppose that "Readers" like one of England's anomalies, who searched for facts after the publication of the history, are searching for facts to corroborate their statement that my letter "would be the means of doing immense mischief." How is it possible for one of that class, whose views are not entertained, whose opinions are erroneously treated as contemptible, and who even are not allowed to give judgment in a case of vital importance to themselves.

A gain, "A month's wages out of nothing." Place "Readers" in a mercantile or other office; they have to go through a certain number of books in a given time, and be paid a certain amount for each revolution. Experience teaches them that they can perform the work thirteen times a-year, and by receiving thirteen pays they

leading us—on the contrary, that he has every conceivable reason in guiding us aright, if for no other reason than self-interest sake; but in face of this fact I hear, upon perfectly reliable authority, that recently many hundreds of shares have been purchased by parties who, residing in Salt Lake City, claim to have the best information upon the present actual position of the mine; and certainly they give the most substantial guarantee as to their belief in the *bona fides* of the information by the investment of their own capital in the shares at prices (I am told) far above those now ruling.

The single step yet taken to dissipate the thickening mist was that of sending a properly qualified representative to examine and report upon the mine—this step, however, was not taken by the board, but by a syndicate of shareholders; but it was rendered utterly abortive for the simple reason that upon the arrival of the representative at the mine he found—"the pump stopped, and the lower workings flooded." This has made "confusion worse confounded," and thus matters, it seems, are likely to remain to the end.

A BEWILDERED SHAREHOLDER.

April 21.

#### CAPE COPPER COMPANY.

**SIR.**—You published a letter about a fortnight since from "Investor" (Limerick) calling attention to Cape Copper. If the investing public knew the real value of these shares, and its excellent management, the price would be 50/-, and not 27/-, to 29/- per share. At the present excessively low price of copper they pay 1/- per quarter, and will continue to do so, it is believed; thus, whilst the Chilianas are losing money we are making it. Last year over 6000 tons of copper ore were extracted from Ookiep, and yet in December the reserves were actually larger than they were at the same period twelve months previously. Ookiep looks as promising as ever—indeed, it is the richest copper mine in the world. The company possess over 500 miles of territory, and other mines, one of which may any day turn out to be another Ookiep. I hold shares as an investment, and have no other connection with the company; but when I see the public daily investing in doubtful schemes and most speculative shares, I do think they should be informed of such a—a remunerative investment as that of Cape Copper mining shares at 27/- to 30/-—a property situated in British territory, and conducted by a most able board in London. I forgot to mention that the present reserves in Ookiep amount to some 36,000 tons.—London, April 23.

ANOTHER INVESTOR.

#### C O A L .

**SIR.**—I have read with much interest the letters of "N. F." and "PICK" about the prices and quality of coal, and I shall feel obliged if either one or both of them can explain the following. This morning a local coal merchant sent out prices as follows (bear in mind Eastbourne is 65 miles further from the pits than London):—

Derby Brights ..... Ton 22.  
Clay Cross ..... 24s.  
by taking 8 tons. Now, the London prices are—  
Derby Brights ..... Ton 27s.  
and the Clay Cross Company advertise their own coal direct from their collieries—

Ton 30s.

Seconds ..... 28s.  
Now, how can a small country dealer, 65 miles further away from the pits, afford to sell in one case at 5s. per ton less, and in the second case sell another person's coal at 4s. and 6s. per ton less than the person who is actually supplying him, and taking into consideration the carriage, he must be selling it, and 8s. per ton less? Either the Clay Cross Company are making very large profits, or else what, Will "N. F." or "PICK" explain? They appear to me well up in the coal trade, and to get to find out this secret is the wish of—

Eastbourne, April 23.

SHOVEL.

For remainder of Original Correspondence, see to-day's Journal.]

#### THE LLAY HALL COAL, IRON, AND FIRE-BRICK COMPANY.—LAYING THE FOUNDATION STONE OF A NEW RAILWAY BRIDGE.

Vigorously industrious appears to be the spirit which reigns supreme in the minds of those who have the management of the above company as regards the development of their works at Cefn-y-bedd, near Wrexham. If energy and zealous activity, backed by capitalists who know that niggardly enterprise means non-success, be of any commercial value, then the new company, which took possession of the above works some months ago, must eventually be pecuniarily rewarded for the investment of their capital. They are sinking two shafts, which have already gone through the Dronwyd seam; whilst from the adjoining pit they are pumping the water with no trouble whatever, which difficulty caused the last company to abandon the work. Apparently there will be no difficulty in their soon getting the colliery into a workable condition. The fire-brick kilns are in full play, and when they are able to raise their own coal it is, we believe, their intention to extend that part of the works so as to produce articles of a more artistic and fancy character than at present. The rolling-mill is standing idle, and probably will remain so until the colliery shows an output that will not necessitate the purchasing of coal to work it. To facilitate the distribution of the products, there is in course of construction a branch railway, which, commencing about the kilns, will be carried to a point near Cefn-y-bedd ( $\frac{1}{2}$  mile), where it will be joined to a branch of the Old Hope Colliery, which is connected with the Wrexham, Mold, and Connah's Quay Railway. The new railway at two points will be carried over the River Alun by girder bridges, 8 ft. 8 in. above the level of the water, and under the Gwastad road by a third bridge. Messrs. Scott and Edwards, of Lytham, are the contractors, and it is expected that the branch will be completed by next September. It was the ceremony of laying the foundation stone of one of the bridges over the river that drew together on Monday morning a number of the shareholders of the company and the local residents. The chairman of the company, Mr. Francis Bennoch, made a short speech appropriate to the occasion. Subsequently a select party sat down to a luncheon in a marquee, the arrangements being carried out by the Wrexham Public Hall Company. Mr. Bennoch presided, and he was supported, amongst others, by Mr. Walcott, C.M.G. director; Major Mc Donnell, of Usk; Mr. H. R. Duke, of London, secretary to the company and to the Argued Colliery Company, Mold, and Mrs. Duke; Mr. J. Sparrow, Ffrwd Ironworks, and Mr. Sparrow, jun.; Mr. and Mrs. James, Wrexham; Mr. R. C. Rawlins; Mr. J. H. Rawlins; Mr. Edwin Clark, manager, and Mrs. Clark; Mr. and Mrs. Boosie, Mold; Mr. J. Broughton (Wrexham, Mold, and Connah's Quay Railway), and Mrs. Broughton; Mr. and Mrs. Edwards, contractor; Capt. Pryor; Mr. C. O. Williams, Wrexham; Mr. Weston, clerk of the works, and Mrs. Weston; Mr. R. H. V. Kyte, Nant-y-ffrith, &c.

After the customary loyal and patriotic toasts, the CHAIRMAN proposed "Success to the company," and in doing so dwelt at some length on the relations of capital and labour. He said that capital was talked very much about, but a large number of people did not understand what it was; after which he explained the meaning of "capital"—the surplus arising from well applied labour. The merchant, manufacturer, miner, and banker found that they had surplus funds which they must apply in a profitable manner. Hence were formed companies which were aggregations of small surplus savings, as the result of thrifit and industry. And such was the case with regard to the company over which he had the honour to preside. A company was not generated with any philanthropic views of benefiting the immediate neighbourhood, but for the purpose of benefiting those who had entrusted their funds for carrying on works from which each would derive mutual profit.

To carry out this object a certain amount of labour was required, and then arose the question, how could they assimilate and harmonise capital in the form of surplus wealth, and capital in the form of individual labour? What the company possessed arising from surplus wealth the individual man had in his bones and sinews, guided by his intellect, and he trusted sometimes by his well-trained intellect. The great question of the present moment was to bring together a capital of body, physical health, and mental skill, and on the other hand the power of money. The question had to be settled, and he dare say that it would settle itself. But how could the question be best settled? Was it to be done by the master and servant, employer and employed, working together in a kindly spirit, or should it be left to the arbitration of men who were foreigners to the neighbourhood, to the sympathies and probably to the interests of both parties to the arrangement which it was endeavoured to effect? Every working man and every artisan had in himself the power of becoming a capitalist by thrifit and industry. He knew it was often said by the working men "It's of no use, we have only 5s. or 7s. a-day. What can we save out of that?" As a rule, his reply was, "What others have done you may do." Stephenson was but a pit boy at the beginning of his career, and could scarcely read when he was 20 years of age; but by thrifit, industry, and skill, he rose to be the most prominent and perhaps the foremost man in England. Then there was Watt, who was comparatively a lame boy, but whose keen, clear sightedness as a mere mechanie, regulating the small philosophical apparatus in the University of Glasgow, rose to become that giant of steam-power, without whose genius England might have been still at its lowest ebb as regarded industrial enterprise. Then they had Telford, whose works were all over the country, and who was particularly fond of Wales. A distinguished servant from the Continent once came to visit the illustrious engineer. He was introduced into a small place in Wrexham or Ruabon, or somewhere in the neighbourhood, and shown into a small room, with a single candle burning, and there he was found to be darning his own stockings. (Daughter.) And Telford—a countryman of his own—was born in a shepherd's cottage on the hill side in the south side of Scotland; and, therefore, he would say that what a working man had done he could do again by thrifit and industry. Capital and labour were not, and never could be, antagonistic; they were one if rightly understood. Governed by the same master, and having the same ends in view, they ought to arrive at similar results. Unhappily, however, differences arose, which are not easily accommodated, and hence the difficulties in connection with strikes, and other matters of that kind. For the purpose of showing what they as a company, and what another company of which he was Chairman (the Mold Argued Colliery Company), desired, he would briefly make a few further remarks.

Observing at their colliery that the men were thrifless, and on certain occasions somewhat riotous, he, through the manager, caused an enquiry to be made as to the possibility of establishing a "thrif fund" for the men, from which they should receive money on the pay-days, and when the amount reached 12/- they should have at least 5 per cent., and for 5/- at least 7½ per cent., and so for them to receive interest in proportion as the company itself succeeded. Notwithstanding what some of his friends had said about the proposal being quixotic, the men had unanimously said, "You bid introduce this fund, and you will save us from ourselves." However, a difficulty arose as to whether they were not invading the sanctity of the state's governing savings banks, although it had been intended that the men should themselves become proprietors by taking one or two shares as the money accumulated, which would thus be carrying out the principle of co-operation. They had not provided for such a proposal in their Articles of Association, and he had been in correspondence with the Home Secretary, to whom he had sent a rough sketch of the proposed regulations and laws to carry out the suggestion, with a desire that he would in the early part of the forthcoming session introduce a clause to enable companies employing labour to carry out such arrange-

ment, which would overcome many difficulties, for labour and capital would become as one; the labourer by saving might become a capitalist, and the capitalist might encourage the labourer in the highest functions in regard to his duties and his work. (Hear, hear.) He found immediately succeeding the pay-day the men became listless and lacked industry, and the dissipation they indulged in unfitted them for work. He reckoned that the men working at the colliery with which he was connected lost by their dissipation on Mondays and Tuesdays at least 40/- or 50/-, and the company lost on an average 20/- or 30/- per fortnight; or per annum the men lost 1000/-, and the company 750/- by the men indulging in their absurd passions. It was to save the men from such deleterious practices that they desired to introduce this system. He might mention that he had been appointed, in connection with a metropolitan gas light and coke company, which had a capital between 3,000,000/- and 4,000,000/-, and employed 3000 men, to ascertain what could be adopted with a view to benefiting the company, and also benefiting the men; for they did not regard their employees as mere tools, but as intelligent men. In concluding this part of his observations, he trusted that good sound common sense and wise counsels would constantly prevail, and that the capitalist and labourer might so work together as to derive mutual advantage, because the two interests combined would lead to the salvation of the country by developing in the highest degree that was possible every commercial enterprise undertaken. (Applause.)

The Chairman next referred to the inauguration ceremony which had been performed that day, and stated that the property of the company had been carefully surveyed by a man in whom he had full faith, and afterwards he had ventured to take upon himself the responsible position of Chairman of the company. In that capacity he had sent out letters to a number of his personal friends, and the result was that the whole of the capital they had required during the past year was subscribed in a fortnight.

They had now more work to carry out, and they proposed to offer the shares they had on hand—1842 of 10/- each, making up 5000 shares of their first issue—*pro rata* to the present proprietors, and afterwards to such other friends as desired to become associated with them. Out of the 1842 shares they had to distribute a fortnight ago at their meeting he did not suppose there were more than 800 or 1000 left, and no doubt that number would become less, so that there would not be more than 400 or 500 to spare for their outside friends. Supposing they had an output of 1000 tons a-day, which they expected would be reached some day, they had sufficient coal in the property to last for a century, and he must confess that he should very much like to be present when the last ton was taken out. (Laughter.) A few months would see the present pits available, and as to the price of coal, if, instead of 14s. or 15s. per ton at the pit as at present, it became reduced to 10s. it would leave a good profit of 2s. 6d. or 3s. per ton, which was the original estimate in the prospectus. After a few other observations, the Chairman concluded by proposing the toast.

Mr. J. JAMES (Town Clerk of Wrexham) gave "The chairman, directors, and secretary of the Llay Hall Company," and spoke of the bright prospect which the company had before them, and of the remarkable change that had come over the valley in which the works were situated since he had first known it.

The CHAIRMAN and Mr. DUKE responded, and the latter gentleman, in proposing the health of the contractors (Messrs. Scott and Edwards, of Lytham), stated that with an undertaking of this magnitude, where they had in their 700 acres of proved minerals enough coal to last a century at an output of 1000 tons a-day, besides the important auxiliaries in the shape of their fire clay works and sheet rolling-mills, perfect railway communication from the works was indispensable. When the railway was in contemplation he had a conversation with a well-known colliery proprietor in this neighbourhood, who said "If you want your branch railway properly carried out get Scott and Edwards to do it." The directors had let the contract to that firm after receiving many other tenders, and they were highly gratified with the progress made, for although the line had been commenced only two months since nearly the whole formation had been made, and the railway would, no doubt, be handed over complete in the ensuing autumn.

Mr. EDWARDS responded, and observed that, in addition to the large area of coal, the company possessed a mountain of first-class clay, sufficient to make bricks to build a town as large as London. Nothing should be wanting on their part to give every satisfaction to the directors.

Mr. R. C. RAWLINS (Hope Paper Mills) proposed the health of Mr. Clark, the manager, which was suitably acknowledged.

Mr. SWAINSON proposed the "Health of the ladies." He believed the high price of coal had crippled the trade of the country, and had done a vast amount of damage; and it was his opinion that they were now on a down-hill road, the end of which would not be reached until coal was nearly at its former price, and until men's wages were at least 30 per cent. lower than at the present moment. He hoped the workmen of North Wales would conduct themselves as well during the period they were about to enter as they had been during the past two years of unexampled prosperity. He had been 20 years in this district, and during the whole of his experience of a quarter of a century he had never known men behave themselves so well as they had behaved themselves during the past two years. He was not going to say to what that was due, but he had an idea that to some extent it was due to the early closing of public houses. But whether that was really so or not they must give the men the credit they deserved for their behaviour. Since the hours of labour had been shortened—and he considered that 54 hours per week was quite enough for any man to work in a pit—the men had worked more regularly. When the Chairman spoke as to whether the negotiations between employer and employee should be conducted by men outside who had no sympathies with them, he did not know whether the Chairman alluded to the Union delegates. If he did, he wished to state that within the last two years he had come very much in contact with the leaders of the Union, and he must say that they had conducted themselves, to his mind, with great forbearance during the good times through which they had passed. As to Mr. Halliday, who had recently been tried for conspiracy, he had always found him to be a man favourable to every conciliatory movement, and altogether opposed to strikes or anything approaching to a conflict between masters and men. His firm had managed with their men just as well as if there had been no Union existing in the district, for he never asked any of them whether they were or were not Union men, for a man had a right to be a Union man if he chose. And during the whole of the recent good times they had never received a notice for a rise of wages, the men having been content to leave the matter in their hands, and they had always granted an increase of wages without notice. (Hear, hear.)—Mr. DUKE responded on behalf of the ladies, after which the following toasts brought the proceedings to a conclusion:—"The Guests," "Mr. J. Broughton (as representative of the railway interest)," and "The Press."

#### AN ACKNOWLEDGMENT OF HONOURABLE CONDUCT.

A dinner was held at the Palatine Hotel, on Wednesday, for the purpose of presenting Mr. Ellis Lever, principal of the Midland Coal Company, and batteau-cloth manufacturer, West Gorton Works, Manchester, with an illuminated address, together with a magnificent testimonial, consisting of a solid silver centre-piece, plateau, two tall fruit-stands, and four compotiers, all *en suite*, of Greek design: also, tea and coffee service, oval tray, round salver, kettle and stand, tea-caddy, biscuit-box, butter-cooler, claret-jug and two goblets, all being of antique style, and each article bearing Mr. Lever's crest and monogram. The address had been prepared by Messrs. Merton and Lly, and the silver services supplied by Messrs. Elkington and Co., the whole costing about 6000/- in 1868. Mr. Lever was unfortunate in business, and had then to suspend payment; but at the close of last year he honourably paid his liabilities with 5 per cent. interest, the whole amounting to between 15,000/- and 20,000/-. The chair at the dinner was occupied by Mr. Shaw, of the firm of Shaw, Baxter, and Co., of Dundee, who were the largest trade creditors at the time of Mr. Lever's suspension; the vice-chair was filled by Mr. Rice, Manager of the Consolidated Bank. After the usual loyal toasts, the Chairman read the following address:

To ELLIS LEVER, Esq.

Desiring to place on record our high appreciation of your honourable conduct in discharging in full, with interest, your pecuniary liabilities of 1868, from which you had been released, and were, consequently, under no legal obligation to pay, we beg to present you with this address, and, as a tangible mark of the greatest esteem in which we hold such exceptional commercial integrity, we request you to accept the accompanying service of silver plate, and, on behalf of Mrs. Lever, the silver tea and coffee service herewith. We trust this testimonial will be gratifying to yourself, and well fitted to hand down to your children in remembrance of this pleasing occasion; and we heartily wish you health and happiness to enjoy its use for many years.—Signed on behalf of the general body of creditors,

SHAW, BAXTER, AND MOON,

MEWBURN AND BARKER,

JOSEPH RICE, Manager, Consolidated Bank.

The CHAIRMAN expressed the pleasure he felt in being present on such an occasion. Manchester, he added, ought to feel proud of the course pursued by Mr. Lever, and hoped many others might be led to follow Mr. Lever's example. He then formally presented the service of plate, and proposed continued success, long life, and happiness to the Lever family.—The toast was spoken to by several gentlemen—Mr. Rice, Mr. Barker (of the firm of Mewburn and Barker), Mr. Lever (of Denton), Mr. Twigg, and Mr. Whitty, all of whom endorsed the sentiments of the Chairman.

Mr. LEVER, in thanking the Chairman for the high encomiums passed on him, said it was a pleasure for the creditors to receive their amounts, it were even a greater to him to be enabled to discharge his liabilities of 1868. His determination had always been to do so, and he felt grateful he had been spared to see the time when he had it in his power to carry out those determinations.

Other toasts followed, and in proposing the health of the Vice-Chancellor (Mr. Rice) it was stated an erroneous impression was abroad that Mr. Ellis Lever was in some way connected with Mr. John Orrell Lever, late M.P. for Galway, and of steamship notoriety. It happened Mrs. Lever's maiden name was Orrell, and this may have led to the impression, but no connection or relationship exists between the family of Mr. Lever and his wife with John Orrell Lever.—*Manchester City News.*

**QUARTERLY JOURNAL OF SCIENCE.**—The April number of this magazine contains an unusually large amount of information of special interest to the readers of the *Mining Journal*. Mr. W. Pengelly, F.R.S., contributes a valuable paper "On Recent Extraordinary Oscillations of the Waters of Lake Ontario and on the Sea Shores of Peru, Australia, Devonshire, Cornwall," &c. This is a most readable sketch, from which much may be learned. His facts certainly explode the notion stated sometime since on the authority of Mr. John Peterick, that the effect of earthquakes was not felt in mines. After remarking that the only possible cause of the disturbances of the sea to which he refers, on the northern as well as on the southern coasts of Devonshire and Cornwall, and at the Scilly Isles, appears to be local submarine vertical shocks, not rising higher than the bed of the sea. These phenomena are, as he considers, occasioned by undulatory earthquakes, but only by vertical shocks. During the earthquake at Antioch, on April 3, 1872, "so long as the undulatory motion continued no houses fell, but as soon as vertical jerks set in a large part of the town was in a few seconds a heap of ruins." Presumably, these vertical shocks proceeding from the deep interior of the earth do not generally rise higher than the basins of lakes or the bed of the sea. Thus, on the day of the great earthquake of 1755, whilst only one shock was perceived on the surface of the mines in Derbyshire Peak, five smart ones were felt at 60 fathoms underground. On the same day, not only Loch Ness and other lakes in Scotland, but even ponds in England were violently agitated without any perceptible shock in the neighbourhood. The third is a paper, illustrated by an excellent chromolithograph of a mass of native copper, by Mr. James Douglas, whose name is already well known to the readers of the *Journal*. "On the Native Copper Mines of Lake Superior," this paper contains much practical information. As to the profits of mining in that district, he shows that 111 mining companies have been formed, and \$15,295,500 of capital raised. Of these one in twelve has reached the dividend state, and these have returned \$11,810,000 in dividends. The remaining original

papers are "On the Modern Hypotheses of Atomic Matter and Luminiferous Ether," by Henry Deacon; "On the Exhibition in Manchester of Appliances for the Production and Economical Use of Fuel;" and "An Investigation of the Number of Constituents, Elements, and Minors of a Determinant," by Capt. Allan Cunningham, R.E. The notices of scientific books and the record of progress in science are of the usual character.

#### MINERAL WEALTH OF SCOTLAND—METALLIFEROUS MINES IN THE HIGHLANDS.

The North Craig, which is the name locally given to a hill at Foot of Gairn, on the estate of Ballater, in Aberdeenshire, has long been known to contain lead and silver. Fully half-a-century ago a strenuous effort was made to develop those treasures by the late Mr. William Farquharson, of Monaltrie, a gentleman who was especially desirous of furthering every possible local industry. He made an attempt to open a mine in the North Craig, not far from the Mansion House of Monaltrie, being induced to do so by observing the metallic richness of some masses of quartz which occurred in the granite rocks on the hill side. Owing, however, to the excessive hardness of the red granite rock containing the quartz the attempt to create a mining industry at Foot of Gairn proved unsuccessful, and it had to be abandoned. A knowledge of Mr. Farquharson's efforts and endeavours has from time to time stimulated other persons to try what could be done in developing the mineral wealth of the district. Occasionally very rich specimens of mineral have been found, but until last year no person had the courage to go into the business of mining on a systematic plan. At last, however, the subject was taken up by the Marquis of Huntly, part of whose Aboyne estates march with the land of Monaltrie, about half a mile to the west of the Farquharson Monaltrie Mine.

The noble lord called in the aid of Mr. Thomas Bell, F.G.S., and under his direction operations were commenced last autumn. A level was driven into the hill in an easterly direction upon the farm standing on Abergairn, about two miles from the village of Ballater, and about a mile west of the former mine of Monaltrie. On account of the hardness of the rock that was ultimately encountered in driving the level the operations in the spot were abandoned. A distance of about 180 ft. from the exterior was attained, but latterly it was only possible to make some 12 ft. of headway per month. It does not seem that dynamite was used in the operations, or else much greater progress would have been made. After it was resolved to abandon the first level operations were commenced a short distance further up the hill. Another level was driven in a northerly direction to a distance of about 100 ft. Various other experimental levels were driven at right angles to the main one, and from them experimental veins were sunk in search of the

# COLORADO SILVER MINES—THE GREAT CARIBOU.

## THE NEDERLAND MINING COMPANY, THE HAGUE, HOLLAND.

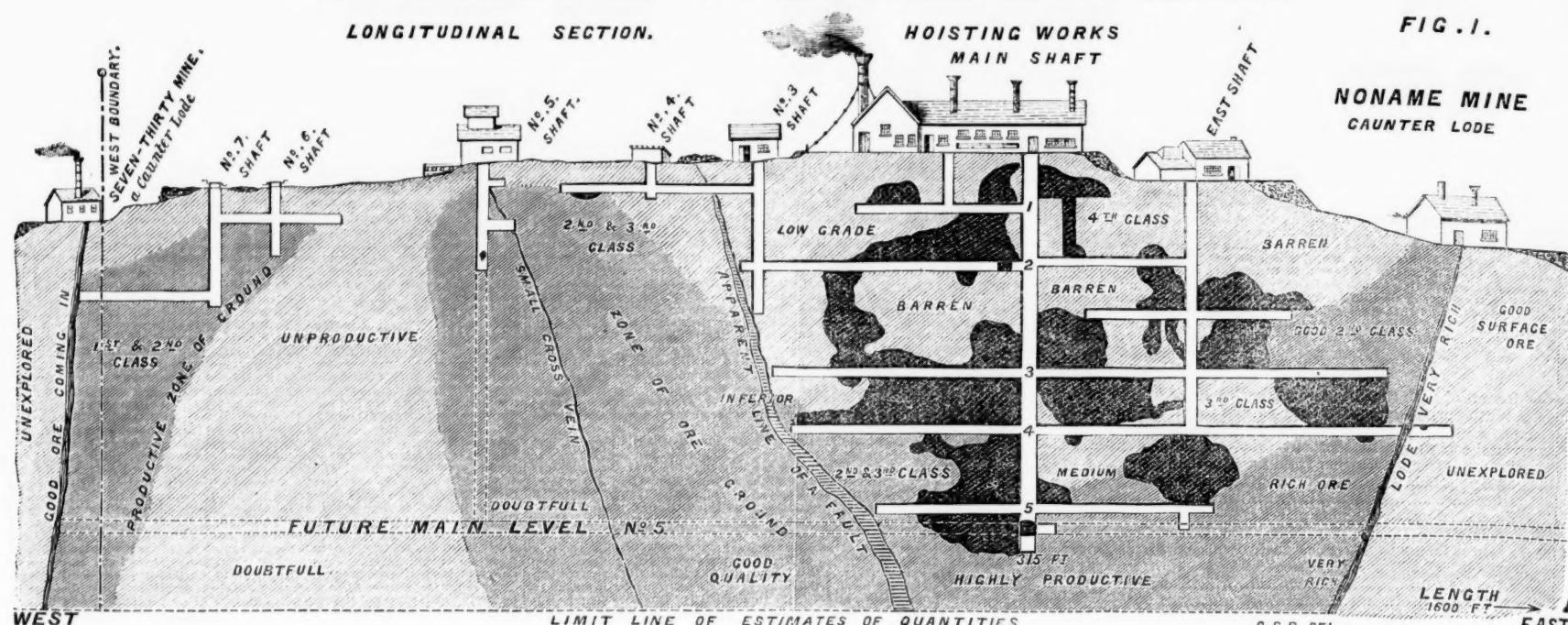
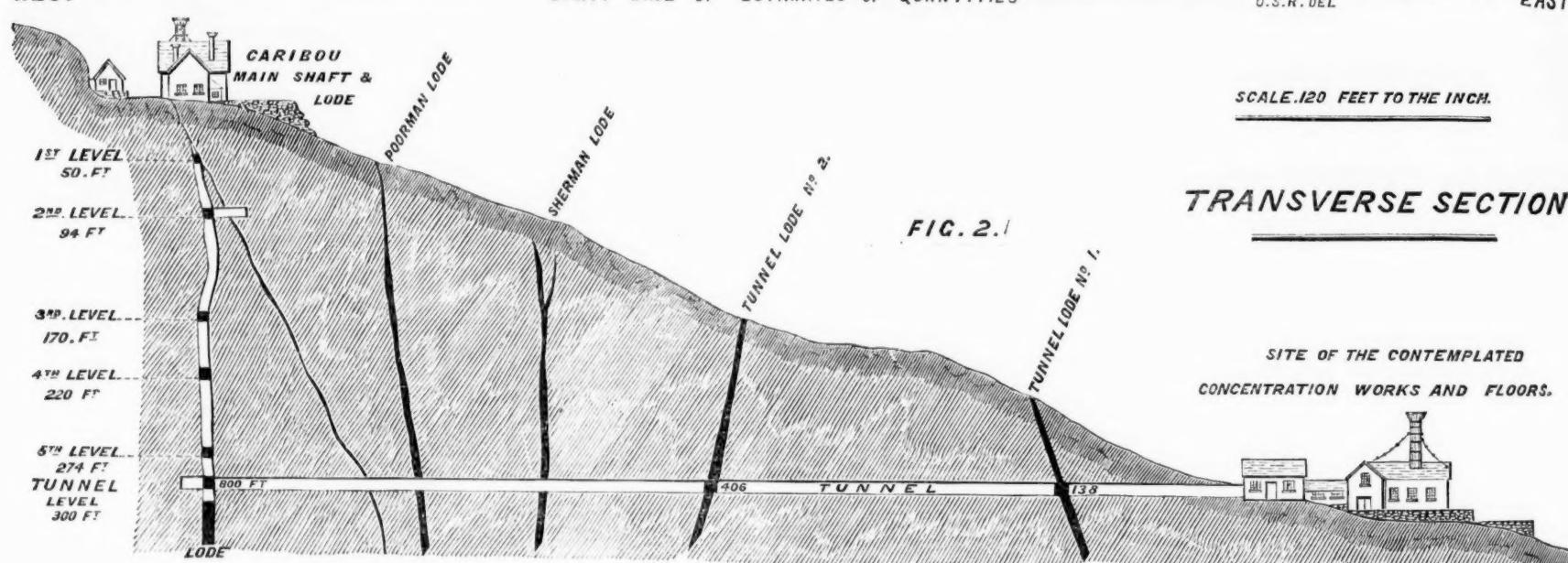


FIG. 1.



TRANSVERSE SECTION

There has probably been no mining property in Colorado, of late years, that has figured so conspicuously, or become of greater public interest, than this celebrated silver mine. It is situated in Boulder county, in section No. 8, township 1, south, in range 72 west of principal meridian, between the North and Middle Boulder Creeks, and about midway from the foot-hills of the Plains and the Snowy Range, at an elevation of about 9700 feet above sea level. Its discovery, in 1870, caused quite an excitement, and a rush to the place soon set in, resulting not only in the discovery and opening of several other mines, but the building up of quite a little mountain town. An excellent turnpike road of easy grade has been constructed from the mines, five miles in length, to the extensive mills and reduction works of the company; these are on the Middle Boulder, a powerful mountain stream, fed by the melting snows of the range in summer and numerous springs in the winter; the average volume of water I estimate at 470 cubic feet per minute. Around these works another village has been built, and which, I am informed, is hereafter to go by the name of Nederland. The improvements of the Caribou district have been rapid; they are well laid out, most of the houses are neat, while some are really pretty, and all designed for utility. There is a project now on foot to construct a line of railway from here to connect with the Colorado Central, at Central City; the distance is only about 16 miles, it can be made at an average gradient of 75 feet, and at a cost of \$12,000 per mile; when completed freight will be reduced 75 per cent.—from \$12 down to \$8 per ton.

**Geological.**—If it was not for the azoic nature of the formation in which the mine is situated I should place it in either the lower Silurian or post Cambrian; the rocks are very old, all greatly indurated and metamorphic, many are highly crystalline and inclined to represent an igneous character. In their order of superposition, and lithological features, they differ but slightly from the European systems, if they are not positively their equivalents; there are, however, no primitive granites, although large masses and eruptive coarse quartzose granite veins are common; generally speaking, the formation may be classed as schistoze; there are heavy beds of an inferior syenite, strong porphyry dykes and injected veins of basalt, trachyte, and other rocks of the trap family. Some of the blue gneiss strata are very beautiful both in texture and colour; this rock is the favourite associate of the rich silver deposits of Colorado, at Caribou. Silica represents 80 per cent. of the entire rock formation, felspar about 12; hornblende, alumina, alkaline earths, and the oxides of the metallic minerals the remainder. Constructively viewed quartzite is the most prominent rock, interstratified with a ferruginous gneiss; as these are more or less mineralised, so the lodes passing through them contain a greater or less amount of metallic mineral. Porphyry, either in contact or close proximity with the lodes, invariably cause deposits of the precious metals. The granites here are concretionary or secondary, and are generally gold-bearing, but when they merge into the mica or hornblendic schists, produce silver-lead. Such is a brief geological outline of the Caribou district.

The CARIBOU LODGE varies but little from an east and west magnetic course, dipping slightly to the north. It was discovered by the outcropping of a small independent vein, carrying rich specimens of silver ore; this, on being followed down for 48 ft., the present great lode was intersected. It is embedded in a stratum of dark blue-gray syenite, of several hundred feet in thickness, as proved by the cross-cut tunnel (see Fig. 2); this rock is highly mineralised, it contains 8½ per cent. of magnetite—i.e., black oxide of iron—a little copper and zinc blende; its hornblende is fibrous and minutely comminuted; hardness about 6; specific gravity, 2.815; water, 7½ per cent.; cleavage planes run from 10° N. to 14° W.; bed joints dip S.E.; the rock is compact and steady in position. The Caribou is, therefore, a true fissure lode; it is from 2½ to 8 ft. in width, its leading

ore vein may be taken at an average of 3 ft. thick; it has been very productive, and exceedingly rich in places; some ore sent to England sold for \$1950 per ton; average of 1st class is about \$300, 2nd class \$120, and 3rd class \$40, consequently very profitable. There are enormous quantities of 3rd and 4th class ores, both at surface and in the reserves underground, waiting the erection of concentration works, the returns alone from which should meet the entire cost of the establishment, leaving the 1st and 2nd class ore nearly all profit. There are seven shafts, the main one is 315 feet deep; to meet the 5th level a cross-tunnel is being driven up, and is now within 200 feet of the lode (see section, Fig. 2); when this communication is made no further hoisting to the top of the hill will be needed, and a great saving effected by working the entire mine through the tunnel, at the mouth of which will be the sampling and concentration works. By reference to the section, Fig. 1, it will be seen there has been 2000 fms. of ground removed in shafts, levels, and stopes; from this has been returned, up to December, 1873, \$619,757 worth of ore, being equivalent to \$309.87 per fathom of ground; now, when it is known that the average value of the ground in sinking, driving, and stoping does not exceed \$85 per fathom, the inference to be drawn is that it must be very remunerative mining. The total amount of sales I have received from the office, but I have not been able to ascertain the actual number of tons of ore that have been reduced, therefore, cannot state the value per ton; but, from a large number of samples I took in different parts of the mine, the specific gravity, by averaging, runs thus:—

$$2.02 + 2.63 + 2.76 + 2.58 + 2.96 = 2.77 \times 62.5 = 173 \text{ lbs. per cubic foot.}$$

Now, if the ore part of the lode throughout the workings is taken at 3 ft. thick, the 2000 fms. excavated must have given 1968 tons of vein stuff, which having proved worth \$619,757, the crude ore would be \$31.47 per ton, this approximates very nearly to the valuation of the ground when taken by the superficial fathom. Now, it has been supposed by many persons the lode has decreased in value in depth; this is an erroneous opinion, which can be shown by the estimates computed from my recent survey, which was done with great care, and for the express purpose of letting the proprietors know the real and true value of their property. To render this valuation lucid, I have marked off a piece of ground 10 fms. below tunnel level, as a limit to define a given quantity, and assumed certain portions of the ground standing above as barren or unproductive; this contains 3638 fathoms of ore-producing ground, or 26,041 tons of milling vein stuff, the average value being \$296.48 per fathom, or \$41.96 per ton, and allowing 20 per cent. for loss in reduction, amounts to net \$1,088,634 gross value. These valuations are deduced from analytical calculations from about 20 cross sections, carefully taken, in various parts of the mine, in the manner of which Figs. 3, 4, 5, and 6 are examples. I wish to be explicit in the matter, as there are several very extensive mines in this country about to undergo, under my direction, a similar ordeal this year. I will commence with the country, or stratum, in which the lode is embedded—a syenitic granite.

	Analysis.	Per cent.
Quartz (silica)	74.50	
Felspar	12.00	
Hornblende (granular and fibrous)	3.00	
Alumina (argillaceous clay)	2.50	
Iron, chiefly black oxide (magnetic)	8.00 = 100	

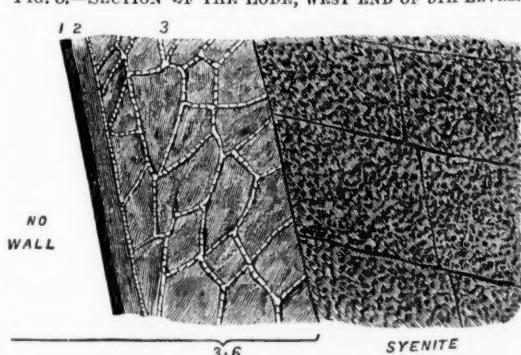
#### Gangue of the lode.

Quartz	0.70 × 2.35 = 164.50	2.54 average.
Felspar	0.20 × 2.25 = 45.00	specific gravity.
Earthy ferruginous clay	0.10 × 2.45 = 24.50	

**The Ores.**—The silver ores proper are a cupreous argenteriferous pyrite, but the amount of sulphur is not heavy, it contains some zinc-blende and antimony, and more of the latter the larger the amount of silver; the ore is remarkably light, the average specific

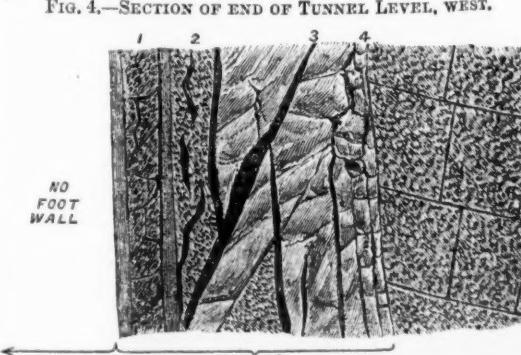
gravity being 3.80. The silver-lead is also very light, the average of eight specimens only gave specific gravity 5.50. Galena itself, such as we obtain from Missouri, runs up to 7.50; the quartz, also, is very light. Whether it is porous or less anhydrous, through induction, or the rarity of the atmosphere at these altitudes, I do not know, but the most dense sample I have yet tried has not a specific gravity of over 2.40, while it should be 2.60; the granular quartz does not exceed 2.25 in any part of this mine; this is a subject for the contemplation of our analysts. The flocks are the heaviest, where compact they run up to 2.50. The average of the vein stuff has a specific gravity of 2.77, consequently it contains 15.52 per cent. of metallic mineral of some kind, what this mineral is can be ascertained by passing it through the crucible and muffle.

FIG. 3.—SECTION OF THE LODGE, WEST END OF 5TH LEVEL.



No. 1.—3 inches of silver-bearing ore, nearly solid.  
No. 2.—3 inches of gossan, carrying silver, ore of 2nd class quality.  
No. 3.—Main body of the lode, chiefly quartzite, but with reticulated strings of white quartz; some of the interstices are filled in with felspar and argillaceous clays full of mineral; this end may be valued at 2½ tons per fathom of \$95 ore. Cost of driving and stoping \$62 per fathom.

FIG. 4.—SECTION OF END OF TUNNEL LEVEL, WEST.



No. 1.—10 inches of blue quartz matrix, with gossans on each side, full of fine-grained bright prills of silver-lead, and cubical black

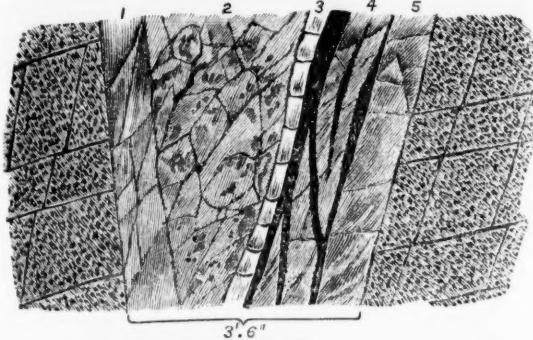
oxide of iron, with some sulphuret of same, worth 1 ton of 200 oz. ore per fathom.

No. 2.—Soft granite, felspar in excess, white mica in comminuted scales; small strings of blue sulphuret of silver pass up through it; the ore is rich, main body quartzite.

No. 3.—Cross feeder of rich silver-lead,  $\frac{1}{2}$  in. at top,  $1\frac{1}{2}$  in. in middle, and 1 in. at bottom, in an opaque quartz matrix, average 1 in. of ore; will run from 300 to 500 ozs. in silver.

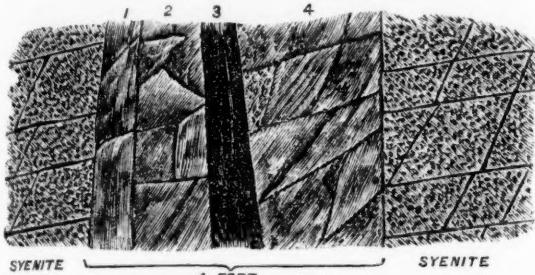
No. 4.—A mixture of quartz and felspar; in it are strings of silver-lead; wall irregular; lode close and inclined to hardness, carries  $\frac{1}{2}$  tons of ore, average yield 180 ozs., value \$360 per fathom; cost of driving and stoping \$85 per fathom.

FIG. 5.—EAST SIDE OF SHAFT.



No. 1.—Brown quartzite, non-metallic.  
 No. 2.—Mottled segregated quartz, much coloured with carbonate of copper, with films of blue and black decomposed sulphuret of silver.  
 No. 3.—Vein quartz and felspar, very hard.  
 Nos. 4 and 5.—8 inches of mixed silver-lead ore and copper in a friable quartz gangue; specific gravity 5·25; the ore is a little scattered, it may be taken at 5 inches solid, produces 2·469 tons per fathom of 200 oz. ore, which, at 80 cents, gives \$395 per fathom; cost of driving and stoping \$85.

FIG. 6.—WINZE IN EAST, 5TH LEVEL.



4 FEET

No. 1.—A decomposed brown ferruginous quartz, 6 in. thick.  
 No. 2.—Soft green-gray granular felspar and quartz, carries silver.  
 No. 3.—A vein of silver-lead ore, 4 in. at top and 12 in. at bottom; it is porous; this is on the east side of the winze; on the west this vein is 5 in. solid; the samples I selected gave an average specific gravity of 3.974, and assayed at 201 ozs. of silver, with some copper, and 20 per cent. in lead; the average of this course of ore exceeds 8 in., therefore gives 2,979 tons per fathom, which, on the 80 cents per ounce basis (exclusive of the lead), is worth \$479 per fathom.  
 No. 4 is a quartzite gangue, containing some 4th class vein stuff, but not to value. When the tunnel is driven up all this ground can

Now, from the foregoing measurements and valuations of this piece of ground, which contains 530 fathoms, the averages are \$348 per fathom, aggregating \$184,440 in gross value, showing most conclusively the lode increases, rather than diminishes, in value with greater depth.

greater depth.

The *Corporation and Future of the Mine* is organised under the laws of the Territory, with a capital of \$3,000,000 fully paid. Moses Anker, Esq., of Boulder, and M. C. Shaffenburg, of Denver, are local directors. P. H. Van Diest, manager, and Capt. Wm. M. Rule, of Cornwall, the mine agent. The property originally belonged to Messrs. Breed and Cutter, of Cincinnati, Ohio, and was purchased by and sold to the present "Nederland" company by Mr. Anker; before purchasing, it was examined and valued by Prof. Vogelsay, of the School of Mines in Holland, and Mr. Van Diest, of the same place. Their report states the reserves amounted to 34,000 tons; the depth taken is not stated, but the value is placed at \$5,700,000, or \$167 64 per ton. This is far too high for average; but if the present courses of ore should hold down for another 100 fms., more than 10,000,000 will be returned. The admissible limits of a Journal article prevents detail; I am, therefore, compelled to curtail description; but if ever my recent report should be published, of which this paper is a mere extract, the whole will be easily understood, that some grave errors, both in the mine and in the milling has been made is evident to all practical mining engineers; this is perfectly excusable, the early operators did the best they knew how with the financial means at their command, which was limited; if they made a slip, which I consider they did in locating their reduction works five miles away from the mine, instead of erecting them in the park or meadows at the mouth of the present mine tunnel, it must be looked on as a matter of inadvertence. As a practical miner myself, I cannot approve of the plan of underground operations hitherto pursued. I have been called upon to express my opinion hereon; this, for prudential reasons I have, as yet, respectfully declined to do. My drawings show the mine as it is. But as the management had the acumen to engage a Cornish mining agent (Capt. Wm. M. Rule), a son of our old esteemed friend Capt. Rule, of Cornwall, to take charge of the works, I hope no underground errors will ever again be made.

works, I hope no underground errors will ever again be made. The Caribou is a great mine, second to none in the Western States or Territories. I do not call it a rich mine, but it is a very productive one, and when judiciously managed, and all its products utilised, will pay handsome dividends for a great many years to come. Could space be afforded, I should like to describe some points which in the future must become prominent. At either end of the set or grant are caunter lodes, against which, or at the junction, the lode makes "very rich." The one at the east is called the "No Name;" its course is N. 46 E., being a difference of  $29^{\circ}$ , with the Caribou; it carries native silver and silver glance, worth thousands of dollars per ton; at the west end is another, known as the "Seven-thirty;" this, too, is rich, but at present not equal to the other. Now, at the intersection, the "Caribou" lode partakes of the nature of each. I have seen lumps of solid native silver from the "No Name" several ounces in weight, and the gangue spangled throughout with the same metal. What these caunters will produce, or how effect the lode in depth, is a matter for scientific speculation, a discussion on which is not admissible in this article. I will, therefore, conclude by expressing a hope that the proprietors will continue to open out the mine by sinking and driving in a miner-like manner, what they are now doing; erect dressing and concentrating works close to the tunnel, and thus utilise all their third and fourth class ore. With economical management the stockholders may congratulate themselves they have made a profitable investment.

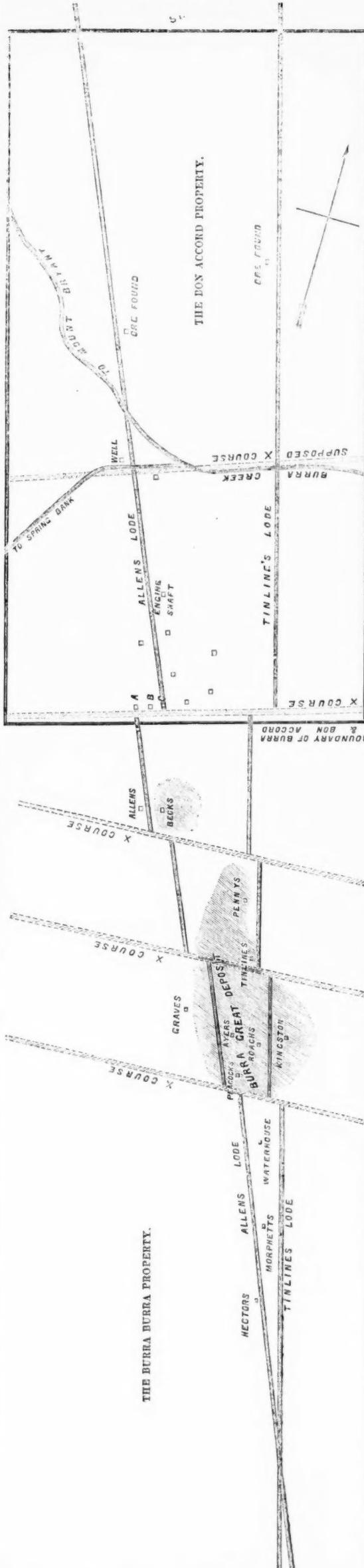
*Central City, Colorado.*

**CHARLES S. RICHARDSON**  
Mining Engineer, &c.

*Report on the Bon Accord property by Capt. Robert Sanders (with permission of the directors) of the Burra Burra Mine in South Australia:-*

I have inspected the Bon Accord Mine, and herewith beg to submit my report. I presume I need not make an elaborate report by entering into the various details of surface appearance, and work done below, &c. Suffice it to state that the property is to the north of and adjoining the celebrated Burra Burra Mine.

# THE YORKE PENINSULA MINING COMPANY.



trate my report) it will be perceived that the Burra contains two separate and distinct lodes, bearing about  $30^{\circ}$  and  $20^{\circ}$  west of north and east of south respectively; thus diverging going into the Bon Accord property. In the Burra these lodes are traversed by several cross-courses, causing intersections and dislocations, which are always desirable in a mining property, and are considered the "factors" of mineral veins. It is between these cross-courses or natural dams that the great deposits of ore were found in the Burra.

By a reference to former reports, and from information collected, I find that thirteen shafts (besides engine-shaft), varying from 7 fms. to 24 fms. deep, have been sunk on your property; nearly the whole of these have been sunk there in the ground between the two lodes. The engine-shaft has been sunk to a depth of 50 fms., and levels driven as follows:—At the 20 fm. level a cross-cut west 12 fms.; cut Allen's lode 12 ft. wide, and drove north and south on its course 64 fms. At the 40 a cross-cut west 10 fms.; cut Allen's lode 14 ft. wide (spots of ore); drove south 12 fms. At 50 cross-cut west 9 fms.; cut Allen's lode 14 ft. wide, drove north 9 fms., fine stones of ore. At the 20 cross-cut, 8 fms. east, cut large stream of water; took two 17-in. lifts going eight strokes per minute to fork it down. Instead of following the water coming in through this fissure (I believe the best indication of a lode ahead), a dam was put in the cross-cut to keep back the water, and there it stands to this day. Although the shaft was sunk to the 50, no cross-cut was driven east again fearing to cut the feed of water. If the divergence of the lodes continues, as seen at Burra, they would be 100 fms. apart at your engine-shaft. Allen's lode, 12 fms. to the west, and Timline's lode, 88 fms. to the east of your engine-shaft. Timline's lode (which we consider the main lode in the Burra) has not yet been seen in your property.

Looking at the configuration of the surface, the fact of the Burra engines keeping the water there to the 50 fathom level, yet in no way affecting the rise and fall of the water in your property, I consider a plain proof of the existence of intervening cross-courses. I am of opinion that a very strong course-course exists close to your south boundary, causing a lateral shift of the lode to the east of about 20 fathoms. This will account for not finding Allen's lode in your shaft A, in a line with the same lode in the Burra, and within 3 fathoms of the Burra boundary. Neither was it seen in your shaft B; but plainly seen (with good stones of ore in it) at your shaft C. This must be so, or a cross-cut 12 fathoms west from engine-shaft could not have cut it. I believe there also exists a very strong cross-course in the Burra creek, as when you were keeping the water at the 50 fathom level at your engine-shaft, the water stood in the shaft to the north of the creek in your property within 18 fathoms of the surface. I believe, also, that between these two cross-courses there has been a great deepening, or down throw, so that deposits of ore will not be found near the surface; but that to the north of the creek deposits of ore will be found at shallower depth.

Taking a view of your property in all its features and bearings in connection with the Burra lodes, and the fact of the existence of cross-courses traversing the same, I do not hesitate to affirm, as my firm belief, that you have all the features and elements of a profitable and lasting mine. I can, therefore, conscientiously recommend it as above ordinary speculations.

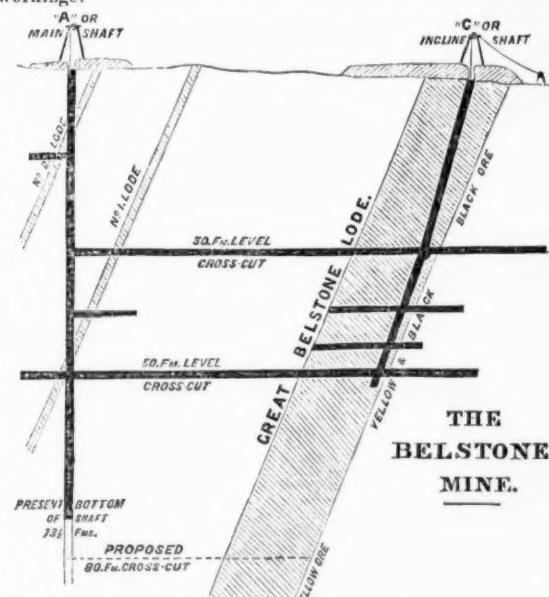
Should you be about to resume operations, I would suggest that 12 men be employed in costeening, six to the north of the creek to find the outcrop of the lodes, and six to the south of the creek to try to trace Tinline's lode from the Burra, in order to prove the relative position of lodes in your property to the lodes in the Burra. These facts ascertained, you could then see if the present engine-shaft be in a proper position, if not, a proper site could be selected for a new and permanent engine-shaft. This staff of men with supervision for 12 months would cost about 1600/- to 1700/. I believe this amount judiciously expended would show results and features that would justify you in extending operations.

*Burra Burra Mines, Dec. 23, 1873.*

## COPPER MINING IN MID-DEVON.

It has long been supposed that in the neighbourhood of Okehampton and Sticklepath large quantities of mineral existed, and from time to time several trials have been made in different parts of the district, and these, although of a weak and inefficient character, resulted in conclusive evidence being obtained, from the large stones and spots of ore and other indications, that undoubtedly there were large deposits of minerals at deeper levels.

At the Fursdon Mine, at South Zeal, more extensive operations have been carried out, and considerable quantities of copper ore have been raised and sold. It seems probable, however, that a new era is now dawning upon the district, owing to the steady perseverance with which the proprietors of the Belstone Mine are pushing forward their sinking operations. This property, which is very extensive, consists of two mines—the Taw River and the Copper Hill, or Belstone, Mine—the limits of the sets extending from 2 to 3 miles in length on the course of the lodes, and from  $1\frac{1}{2}$  to 2 miles in width. At Copper Hill three shafts have been sunk, and several highly promising lodes have been cut into; one, the main lode, proved to be of extraordinary size, over 100 ft. in width, and upon this lode an incline shaft is sunk to the depth of 54 fms., from which explorations have been made at the 30, 40, and 47 fm. levels, the result of which is to prove that this great lode contains copper ore of a very rich quality, averaging from 11 to 14 per cent. more or less throughout its width. We believe something like 6000 $\ell$ . has been realised by the sales of ore. At the 30 and 40 fm. levels the ore is mostly found in black bunches, but as depth is reached good branches of yellow copper ore are met with, and it is confidently believed that immense deposits of yellow copper ore will be found at deeper levels. It has been from the first predicted that at a depth of about 80 fms. these deposits will be met with, and from the following illustration, for which we are indebted to the courtesy of the directors of the Belstone Mining Company (Limited), it will be seen that the main shaft, which is being rapidly sunk, is down to the depth of  $73\frac{1}{2}$  fms., so that a few months more will see the 80 fm. level cross-cut driven, and the lode intersected at a point nearly 200 ft. below the present workings.—



The proprietors are backed in their confident anticipations by the opinions of first-rate mining engineers who have examined the pro-

party, amongst others of Capt. James Richards, of the Devon Great Consols, who, we understand, has been consulted from the first, and who prophesies that it will be more successful even than the Devon Great Consols has been. Certainly the proprietors have ample scope, numerous lodes of high promise, excellent geological position, and, what is of great consequence, unlimited water-power and first-rate machinery. We look forward with interest to the intersection of the lodes at the 80'. The proprietors have with great spirit pushed forward their operations to the present time, and if they succeed, as anticipated, in proving their large property second to no mine in the two counties the shareholders will reap a rich reward, and, what is of far more consequence to the public, be the means of opening up a new and profitable mining district, giving employment to a large number of men.

### Greetings of Public Companies.

#### SCOTGATE ASH STONE COMPANY.

The general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday, —Mr. CHARLES SENDEY in the chair.

Mr. FRANK TRICKETT (the secretary) read the notice convening the meeting, and the directors' report and statement of accounts were submitted : —

The directors report that during the past year, the first of the company's operations, they have, for the more efficient and extended working of the quarries, in addition to the plant and steam cranes (taken over from the former proprietors), erected an engine, boiler house, and saw mills. They have fixed therein a steam engine, a water engine, a rubbing table (Coulter and Harpin's), two sawing frames, two tooling machines, &c. They have erected four large sheds for masons, and also loading wharves. To supply the water engine they have constructed a reservoir for collecting and storing water, capable of containing over 2,000,000 gallons. They have erected an overline of traveller and fixed a turn table, so that the stone can be brought to and from the sawing and tooling mills in the most economical manner. For the further increase of the output they have purchased and fixed a new steam travelling crane, making the third in work at the quarries. The directors have greatly enlarged the area of operations, but to do this (from the contour of the quarry property) they have had to increase the harking, or quantity of uncovered stone. Considering it necessary that some responsible persons should have charge of the premises when the men are not at work, they have erected two cottages at the quarries for their residences, and have also erected at the same time suitable offices for the transaction of the company's business. The company commenced business operations on March 1, 1873, and have sold goods to March 31, 1874, of the value of £1,611 19s. 7d. This result they deem satisfactory. They have plenty of orders on the books, and abundance of stone waiting to be hewn, but at present are short of hewers, owing want of lodgings accommodation. There is reason to believe that, during 1875 the operations will be much extended, and output increased. They have obtained leave from the Ecclesiastical Commissioners to win coal in Bishop-side, adjoining the company's property, upon most favourable terms, which they trust will materially reduce the coal bills for the future. Space having been obtained in the International Exhibition, specimens of the stone from the quarries have been sent there, consisting of a large landing, a long step, rubbed, tooled, and self-faced paving, pitch faced wallstone, &c. It was deemed the more desirable to exhibit these specimens, inasmuch as many manufacturers industriously circulated, first, that there is no stone in the company's property; and, second, that, if there is any it is of a very inferior description. The statement of accounts shows a profit upon 13 months' working of £387. 19s. 3d., out of which the directors recommend a dividend at the rate of 8 per cent. per annum, which will absorb 549. 11s. This, with the interim dividend already paid, will leave £387. 19s. 3d. to be carried forward to next account.

The CHAIRMAN had no doubt the shareholders had looked through the report, and they had also heard what had been done in September. They had not then closed their books, and as they had some money in hand they thought it desirable to distribute it among the shareholders. The accounts were now audited and, they were in a position to lay a complete balance-sheet before them. It was pleasing to be able to show that £308. 19s. 3d. profit had been realised on the thirteen months' working, in addition to much written off. The lease, to wit, they proposed to write off entirely in ten years, and the first tenth was charged in the present account, and 7½ per cent. was written off upon plant of all descriptions. In October last they declared a dividend of 32½%, and they proposed now to declare a dividend of similar amount — at the rate of 8 per cent. per annum. After doing this they would be able to carry forward £387. 19s. 3d. It was considered desirable to carry forward this amount, because theirs was a young company, and they did not wish to call up additional capital, and they hoped to double their output, which would render it necessary to have double the amount of working capital at their disposal. He proposed that a dividend at the rate of 8 per cent. per annum should be declared, which would absorb 549. 11s., and leave £387. 19s. 3d. to carry forward. In doing so he need only say that he and his co-directors would be happy to answer any question the shareholders might put. —Mr. GUNNER seconded the motion.

Mr. LEAR enquired whether the 8 per cent. was to be paid on the seven months, and suggested that in future the amount should be declared free of income tax, as he considered it preferable to pay the tax out of the surplus, instead of deducting it from each shareholder.

The CHAIRMAN said that the dividend would be paid on the seven months. The reason their accounts were for the thirteen months was that they took over their quarry on March 1, and as their leases and other affairs of course dated from the ordinary quarter days, it was considered advisable to include the extra month, so as to bring the dates together. They had been 13 months hewing or uncovering the stone, but they had received a letter from their local manager, stating that that was finished on Saturday last, and that now nothing remained to do but draw stone. They had sent away on the average 20 trucks of stone per week, were now sending about 24, and in a month they hope the number would be increased to 32, which showed the necessity of keeping working capital, as in extending their business they would of course have a larger amount on their books. They had never found any difficulty in obtaining trucks when they gave a day's notice, for the North Eastern Railway Company had 10,000 trucks, and any one of the larger depots. They had the advantage, too, that they could take the trucks to what they called their wharf on the quarry, so that the stone was loaded into the trucks without craning or anything of the kind. He told them in September that they must put up cottages, and they had now put up two to lodge two trustworthy men, who would keep watch over the property of the company. They had also erected offices for the business of the company in the centre of the works, and had a rubbing table, water engine, and other necessary plant; they had just received a letter from the local manager, stating that the water engine was working well. They had constructed a reservoir, which they stated in the report would hold 2,000,000 gallons; he believed that it would hold 2,300,000 gallons. The vendor in the first instance had little confidence in our obtaining sufficient water to fill a reservoir, but they had 6 ft. 8 in. of water in it almost before it was finished. He had estimated that they would be able to use water eight months in the year, but he now believed they would have it for the whole twelve months. They would thus save 22 tons of coal per month, which was an important item. They had erected a steam traveller, 40 feet long, and a new steam crane; they had now three steam cranes at work. They knew that they had 21 ft. of shale to go through, but were told that beneath it they would have some of the best stone in Yorkshire. They had now gone through it, and he was astonished at the excellent stone they were getting; he did not believe there was any stone in Yorkshire equal to it. Their local manager's letter, which he had already mentioned, told them that they had got out a post 11 ft by 7 feet 8 in., and in six months they would be able to show by their balance sheet what they were doing. They had been only hewing, but they occasionally got some pickings in doing this, and these pickings had given them £1000 profit, and it would take two or two years and a half to work the stone now hewed. They did not intend to do more hewing this summer, but in winter when the stone could not be worked they would do more hewing. He suggested that the next meeting should be held at the quarry, and he was sure all shareholders who went there would be satisfied that they had a good paying concern. They had, of course, had to contend with difficulties during their first year of working, at these difficulties had now subsided. They had got the Ecclesiastical Commissioners to grant them the right to work the minerals in Bishop-side, and hoped thus to get what coal they required on their own estate. They had found a thin seam of coal, and the terms upon which they held the grant was very favourable; they had a five years lease, and the royalty was £1. per ton. At present their coal was only delivered at the siding in the valley, and as their railway was 1 in 3 they had to divide the tonnage load into four, and carry up 2 tons at a time. They were now paying 38s. per ton for coal, but if they succeeded at Bishop-side, as he had no doubt they would, they would get their coal at 7s. 6d. per ton, or about a fourth of what it now cost them.

Mr. ARMITAGE enquired the horse power of the water-engine, and the thickness made and mode of working the coal?

The CHAIRMAN said that the nominal power of the water engine was 25 horse, but it was really rather more. They hoped the coal seam would be 18 inches thick, when they got properly upon it. They were driving upon it from the face of the hill, and had put down an air shaft 30 ft. deep. As to the water engine, he might mention that it was rather a novelty; it had ports and slides much like an ordinary steam-engine, and had oscillating cylinders. The only objection they could possibly be urged against the engine was that they could not reverse it, but in practice this was no inconvenience. It was calculated to make 23 revolutions per minute, and really made 22½ revolutions. There was no doubt as to their being able to fill their reservoir with water, for three weeks since he had to go up on the Sunday morning, and they had to work to let off the overflow. Their reservoir was filled in an hour and a quarter.

Mr. TRICKETT (the managing director) explained, in reply to an enquiry, that there could be no doubt as to their obtaining water. Their quarry was just on the rising ground at the foot of the hill, and they collected the water before it went down into the valley. In this valley the river would rise 4 ft. 6 in. in two hours, which would show them what a large water-shed it was supplied by. The reservoir was necessary, because although plenty of water ran into their quarry, it ran away again as quickly, unless it were caught. With the water-engine the whole of their machinery was worked, but the steam cranes had to be worked with coal; at some future time their Chairman might find means of working these with water also. In working their coal the adit was driven in on the level, or with only sufficient fall for drainage, &c., so that all the material would come out to the day, and he had no doubt whatever that they would produce the coal at 7s. 6d. per ton against 30s. As they used much coal and iron on the quarry this would be

a great advantage. One of the shareholders had asked whether it was desirable that those of them who were customers should increase their purchases. Of course, that would be desirable as increasing their business, but their difficulty at present was to get out stone to supply the customers they had. If they could quadruple their output he believed they would have plenty of customers to take it. All who had seen the quarry were satisfied that they had a very valuable property, and that it would prove a great commercial success. He hoped that every shareholder would, if possible, take an opportunity of visiting the property; and those who could not go there should visit the London International Exhibition, and look at the stone from the company's quarries there exhibited. He had had much experience himself, and was satisfied they had one of the best quarries in Yorkshire.

The CHAIRMAN said that at the last meeting he had objected to the company building cottages, as he did not believe it would give them 5 per cent. profit, but as the existence of cottages would add to the profits of the quarry he would not object to assisting in that direction as a private individual. He had hoped that a proposition made would have been carried out, and have given them cottages before this, but for some reason the gentleman who had made the proposal had withdrawn.

They were much inconvenienced from want of cottage accommodation, and only three weeks since lost some good workmen because they would not stay and submit to the only lodgings obtainable at Pateley Bridge.

Mr. TRICKETT said that although the cottage scheme did not succeed he did not quite agree with the Chairman that only 5 per cent. profit could be gained; he thought they could get more than that. Several cottages had been erected in the neighbourhood, and it would have to be a matter for the future consideration of the company as to how accommodation was to be provided. Mr. Metcalf, the owner of most of the land about there, was willing to give every encouragement, and believed that many cottages would be built by private parties. If they got good men they would not be content to be lodged in small, dark, and ill-ventilated rooms in which he himself could not stand upright in. Pateley Bridge was an old town, and the rooms were all small.

The CHAIRMAN was still of opinion that they would not get 5 per cent. for money expended on cottages, and feared it would be long before they could get their men properly housed, and they must, therefore, do their best to use machinery, so as to do the largest possible amount of work with the fewest men. They had a fall of 135 ft. from the reservoir to the water engine, and at present the water was merely running through the pipes, which were not more than two-thirds full, yet driving all their machinery.

The usual complimentary votes were then passed and acknowledged, and the meeting separated.

#### THE OVERSEAL COLLIERY COMPANY.

The second general meeting of shareholders in the Overseal Colliery Company was held at the company's offices on the property at Overseal, Leicestershire, on Saturday last, when the interest of the shareholders was largely represented,

Mr. W. G. CRAIG in the chair.

Mr. FRASER (the secretary) read the notice convening the meeting.

The CHAIRMAN, in opening the meeting, said: It is not my intention to detain you long, as it is not necessary to dilate upon the present position of the company. Each shareholder has received the report and statement of accounts, and as you are here on the spot you can see and judge for yourselves of the progress made, and form your own conclusions as to the future prosperity of the undertaking. Some of the shareholders objected to the meeting being held at Overseal, but I can assure you that the only reason for so doing was to give you an opportunity of viewing the colliery personally. I am anxious that each individual shareholder should at some time or other pay a visit to the property, and so disabuse his mind of the adverse rumours that have been circulated from time to time. As you are aware, at the last general meeting it was resolved that the company's property should be tested as to the existence of workable seams of coal. At the same time it was understood that the shareholders would be called together as soon as the Ell coal should be reached, for the purpose of considering as to the advisability or otherwise of further sinking to the main coal. The directors fully anticipated that a meeting would have been held at an earlier date. The Ell coal has, however, only just been reached, but I am bound to state that had the same skill, energy, and economy been practised prior to the engagement of the present engineer, Mr. Fearn, the main seam of coal would by this time have been reached. I am proud to be able to congratulate the shareholders upon securing the services of such an engineer as Mr. Fearn (who is the mining agent to the Duke of Devonshire, and also engineer to several large undertakings), and such a manager as Mr. Hendy. The latter has worked very hard for the company, and carried out the engineer's instructions in the most satisfactory manner. I think it is desirable that we should not sink any further at present; in fact, not until the Ell seam is thoroughly proved. We had better be guided by our engineer, and do that which he thinks best. Mr. Fearn, who is present, will tell you exactly the position of matters, and therefore I will now call upon him to address you.

Mr. FEARN, in a long speech, gave a detailed account of the property, and spoke of it as being a valuable one, and which, with careful management, ought to pay to it. The Ell coal having only just been reached, he said it was impossible for him to say before fully opening out the seam whether it would be desirable to work it, or continue sinking to the next seam, a distance of about 30 yards. He promised to make a careful inspection, and would advise the directors to the best of his judgment. He further stated that he had hardly had time to form an opinion as to the desirability of working the present seam, but he thought it would turn out good coal, and could be worked at a very fair profit. He said that a seam in Chesterfield of this description was being worked with perfect success. He thanked the Chairman for the high compliment he had paid him; and as regards Mr. Hendy, the manager, he fully endorsed what had been said, and was confident that a steadier or better manager could not be found.

The CHAIRMAN, after asking if any shareholder wished to put any question to the board, remarked that he had omitted to draw attention to the fact mentioned in the report that a call of 1/4 per share would be necessary to continue the working of the colliery. —Mr. J. HOLDSWORTH proposed that the reports and accounts be adopted, which, being seconded by Mr. WISHART, was carried without a dissentient.

Mr. F. L. TOWN said, I look upon the present position and prospects of the company as most satisfactory, and consider that the best thinks of the shareholders are due to the Chairman and directors for the immense amount of time and labour they have bestowed upon the affairs of the company, and for which, at the present moment, they have not received one shilling remuneration. Seeing that a call is absolutely necessary, I beg to propose that a call of 1/4 per share be made. This resolution, being seconded, was carried unanimously.

The CHAIRMAN said: Mr. Houghton and myself wrote from the board by rotation, were now sending about 24, and in a month they hope the number would be increased to 32, which showed the necessity of keeping working capital, as in extending their business they would of course have a larger amount on their books.

They had never found any difficulty in obtaining trucks when they gave a day's notice, for the North Eastern Railway Company had 10,000 trucks, and any one of the larger depots.

They had the advantage, too, that they could take the trucks to what they called their wharf on the quarry, so that the stone was loaded into the trucks without craning or anything of the kind.

He told them in September that they must put up cottages, and they had now put up two to lodge two trustworthy men, who would keep watch over the property of the company. They had also erected offices for the business of the company in the centre of the works, and had a rubbing table, water engine, and other necessary plant; they had just received a letter from the local manager, stating that the water engine was working well.

They had constructed a reservoir, which they stated in the report would hold 2,000,000 gallons; he believed that it would hold 2,300,000 gallons.

The vendor in the first instance had little confidence in our obtaining sufficient water to fill a reservoir, but they had 6 ft. 8 in. of water in it almost before it was finished.

He had estimated that they would be able to use water eight months in the year, but he now believed they would have it for the whole twelve months.

They would thus save 22 tons of coal per month, which was an important item.

They had erected a steam traveller, 40 feet long, and a new steam crane; they had now three steam cranes at work.

They knew that they had 21 ft. of shale to go through, but were told that beneath it they would have some of the best stone in Yorkshire.

They had now gone through it, and he was astonished at the excellent stone they were getting; he did not believe there was any stone in Yorkshire equal to it.

Their local manager's letter, which he had already mentioned, told them that they had got out a post 11 ft by 7 feet 8 in., and in six months they would be able to show by their balance sheet what they were doing.

They had been only hewing, but they occasionally got some pickings in doing this, and these pickings had given them £1000 profit, and it would take two or two years and a half to work the stone now hewed.

They did not intend to do more hewing this summer, but in winter when the stone could not be worked they would do more hewing.

He suggested that the next meeting should be held at the quarry, and he was sure all shareholders who went there would be satisfied that they had a good paying concern.

They had, of course, had to contend with difficulties during their first year of working, at these difficulties had now subsided.

They had got the Ecclesiastical Commissioners to grant them the right to work the minerals in Bishop-side, and hoped thus to get what coal they required on their own estate.

They had found a thin seam of coal, and the terms upon which they held the grant was very favourable; they had a five years lease, and the royalty was £1. per ton.

At present their coal was only delivered at the siding in the valley, and as their railway was 1 in 3 they had to divide the tonnage load into four, and carry up 2 tons at a time.

They were now paying 38s. per ton for coal, but if they succeeded at Bishop-side, as he had no doubt they would, they would get their coal at 7s. 6d. per ton, or about a fourth of what it now cost them.

After the appointment of Mr. Sharratt as auditor to the company, Mr. J. HOLDSWORTH proposed a credit note to the Chairman and directors for the expenses of the company's affairs; which was seconded by Mr. WISHART and carried with acclamations.

The CHAIRMAN, after returning thanks, called Mr. Hendy, the manager, and congratulated him upon the manner in which he conducted the colliery under Mr. Fearn's instructions. —The proceedings then closed.

The shareholders and others present then inspected the property, and after descending the pit and witnessing the blasting of the coal, and other interesting details in connection with colliery working, returned to town.

#### WICKLOW COPPER MINE COMPANY.

The half-yearly general meeting of shareholders was held at the company's offices, Grafton-street, Dublin, on Thursday,

Mr. RICHARD W. KELLY in the chair.

Mr. THOS. BAKER (the secretary) read the notice convening the meeting, and the reports of the directors and mine manager, together with the statement of accounts, were submitted.

The directors regret the diminished demand for pyrites, which seriously affected the half-years receipts, but the increased and steady demand for iron ore at advanced prices was taken full advantage of, enabling the directors to profit of 16s. 8s. 6d. to the credit of the mine account.

The directors expect the delivery of pyrites during the current half-year, under the new contracts they have made, will show a better return from this branch of the company's business, and in connection with the iron ore, the demand for which is extending. The anticipated discovery of fresh lodes, referred to in the last report, has been realised, and from the extent of the deposits now exposed they have no doubt of there being iron ore enough to allow of a continued increase of deliveries for many years to come. In the expenditure of the half-year is included a sum of £420. for turfwork operations, by which the mine has been placed in a thoroughly satisfactory and efficient state to meet any demand upon it for pyrites, and to render unnecessary for some time to come any further special expenditure in this direction, except so far as may be necessary for the further development of the iron lodes. The raisings of copper pyrites of good quality have increased, and there is every prospect of still larger quantities being obtained from the mine during the present and future half-years. In pursuance of the decision come to at the last meeting of the shareholders, your directors advertised the "Arklow Chemical and Artificial Manure Works" for sale, but as yet have received no applications for the purchase.

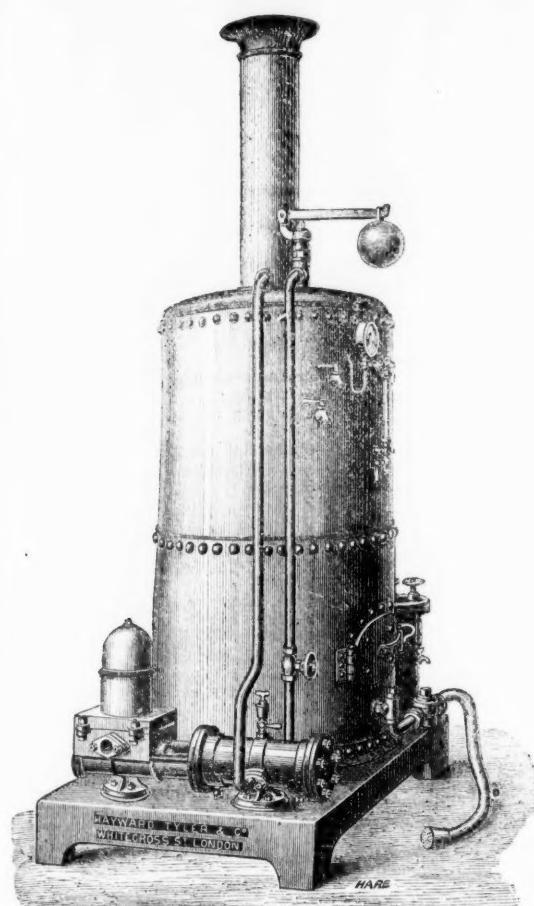
The balance sheet shows that the total liabilities of the company, including the mortgage debt, are 16,585/- 7s., against which there are available assets represented by good debts, bills, &c., and ores raised and paid for (but exclusive of shares on hands and Government Stock), to the amount of 19,604/- 14s. 7d., showing a surplus of assets over liabilities of over 3000/-, to which is to be added the value of the extensive chemical works at Arklow. The sale of these works will accordingly place at the disposal of the company a large sum, and when the proper time arrives it will be a matter for careful consideration how much, if any, of the capital thus recovered need be retained for the working of the mine, and what will be the best application to make of the remainder. The profit and loss account shows that a sum of 70. 19s. has been paid for outstanding dividends on six shares, the title to these shares having been proved to the satisfaction of the directors. The representatives of Turner Camac having also satisfactorily proved their claim for 74 shares and 87s. outstanding dividends thereon, arrangements have been made for handing over to them both shares and money; the latter will be paid out of funds at present lodged in the Court of Chancery. The late Rev. William Edward Kyan, having transferred to the representatives of the late Turner Camac his interest in 386 shares, and 45s. 9s. 6d. outstanding dividends thereon, a notice of action for recovery of both shares and dividends was served on the company. It will be recollect that this claim has been pending for more



# HAYWARD TYLER & CO., ENGINEERS,

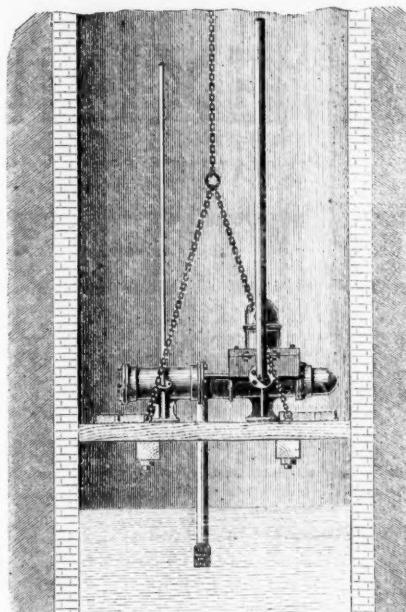
WERE AWARDED FOR THESE PUMPS FOR DEEP MINING AND OTHER PURPOSES,

THE GRAND PRIZE MEDAL FOR PROGRESS.



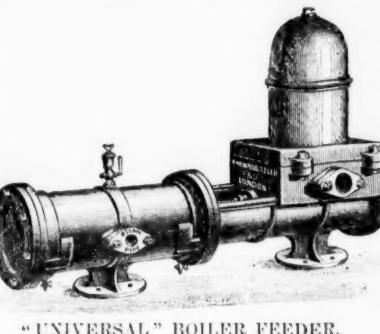
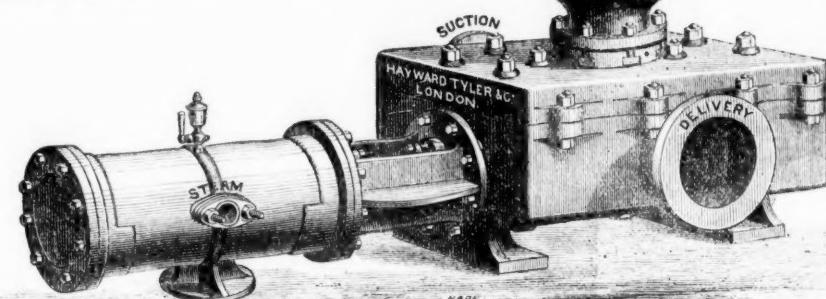
THE "UNIVERSAL" WITH BOILER.

"Important to buyers of this Steam Pump is a specimen of one of the steam valves, shown after working for more than two years. It is without any wear, without even a scratch, and the marks of the tool can be seen.—*Engineer*, Dec. 13, 1872.

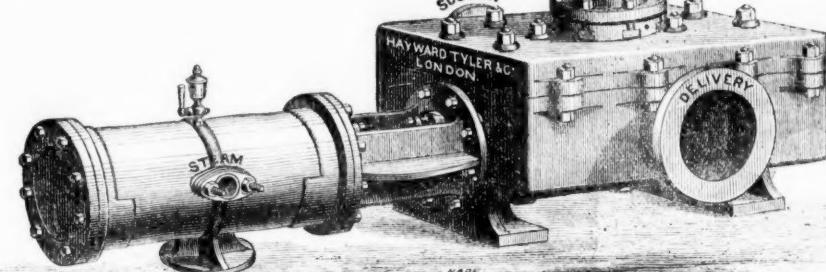


SHOWING THE "UNIVERSAL" SLUNG IN "DROWNED-OUT" PITS.

"It is a fact that, although there are a variety of Direct-acting Steam Pumps in the Exhibition, none that we have noticed works so quietly."—*Engineer*, Aug. 1, 1873.



"UNIVERSAL" BOILER FEEDER.



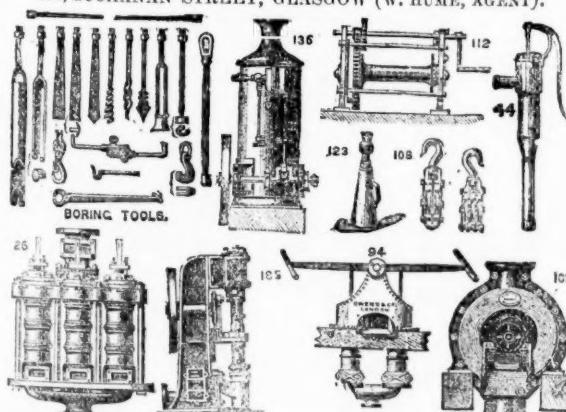
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Hydraulic and General Engineers,  
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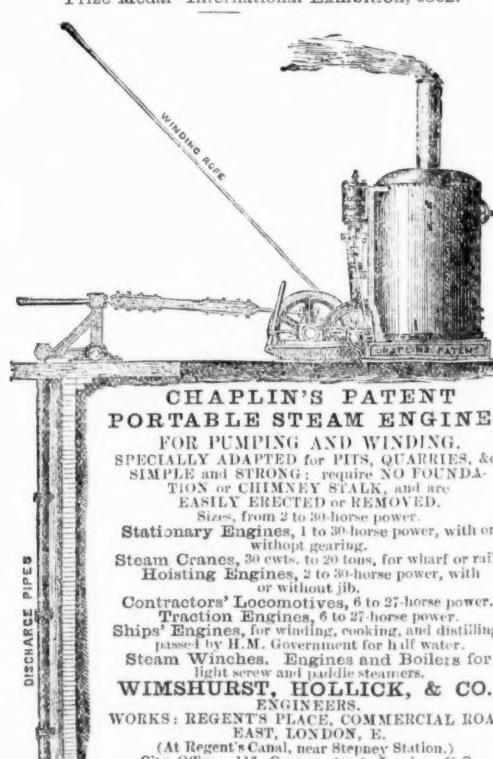
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sufferers how they may be cured without the aid of quacks. Free on receipt  
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FOR PUMPING AND WINDING.  
SPECIALLY ADAPTED for PITS, QUARRIES, &c.  
SIMPLE and STRONG; require NO FOUNDATION  
or CHIMNEY STALK, and are  
EASILY ERECTED OR REMOVED.

Sizes from 2 to 30-horse power.

Stationary Engines, 1 to 30-horse power, with or  
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Steam Cranes, 30 cwt. to 20 tons, for wharf or rail.

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passed by H.M. Government for half water.

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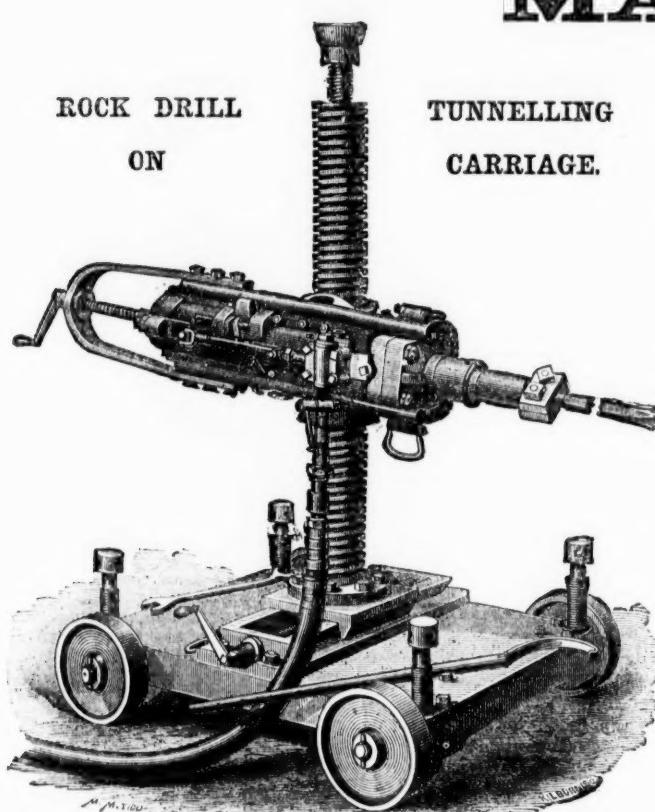
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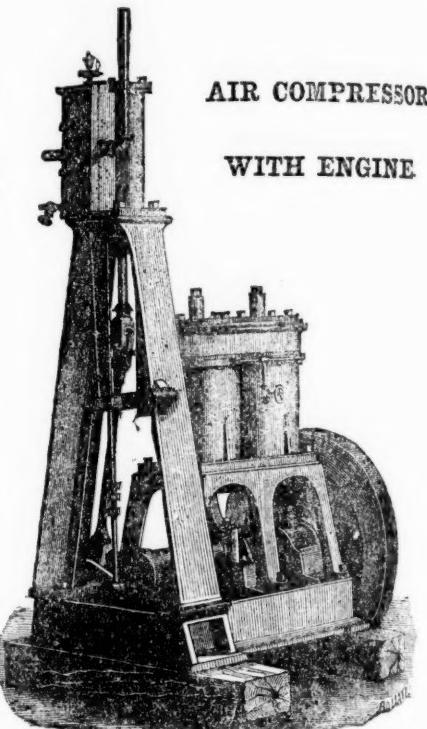


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MEDALS for PROGRESS  
AT THE  
VIENNA EXHIBITION  
AWARDED TO  
THE "BURLEIGH"  
ROCK DRILLING AND AIR COMPRESSING  
MACHINERY.**



ROCK DRILL  
ON

TUNNELLING  
CARRIAGE.



AIR COMPRESSOR  
WITH ENGINE

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The Drills (in 5 Sizes) can be Mounted on any Description of Carriage or Support, according to the Nature of the Work.

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Extract from Paper read before the British Association at Bradford, 1873, on Brain's System of Mining and Shafting Sinking at the Drybrook Iron Mines, Forest of Dean, using the "Burleigh" Rock Drilling and Air Compressing Machinery:

(Shaft 10 ft. Diameter.)

### COST OF SHAFT BY HAND

During a Fortnight.

Sinkers, twelve, 12 days each, at 5s. 6d. . . . .	£39 12 0
Water Fillers, three, 12 days each, at 3s. 6d. . . .	6 6 0
Blasting powder . . . . .	1 2 0
Total . . . . .	£47 0 0

Depth Sunk 3 yards—Cost per yard . . . £15 13s. 4d.

Depth Sunk 5 yards—Cost per yard . . . £8 16s. 9d.

THE ABOVE STATEMENT REPRESENTS WHAT IS NOW BEING DONE AT THE ABOVE MINE.

### ADDITIONAL TESTIMONY.

*The Weardale Iron and Coal Company, via Darlington, Sept. 6th, 1873.*

(COPY.)  
Messrs. T. BROWN & CO., 96, Newgate Street, London, E.C.

DEAR SIRS,—I have much pleasure in informing you that the Rock Drill and High-pressure Boiler, with which you supplied us, are both working extremely well.

I am, yours truly,  
(For the Weardale Iron and Coal Company, Limited),

J. R. CRONE.

(COPY.)

DEAR SIRS,—In reply to yours of 2nd inst., I am sorry I have not time to go into the comparative results of hand labour in sinking with that of the work done by your "Burleigh Drill." All I can say is, that for the last few months it has been giving me every satisfaction, and there is a marked difference in the progress of our sinking operations.

*Crossfield Iron Ore Works, Crossfield Moor Row, via Carnforth, Sept. 8th, 1873.*

I am, yours truly,

JOHN MAIN.

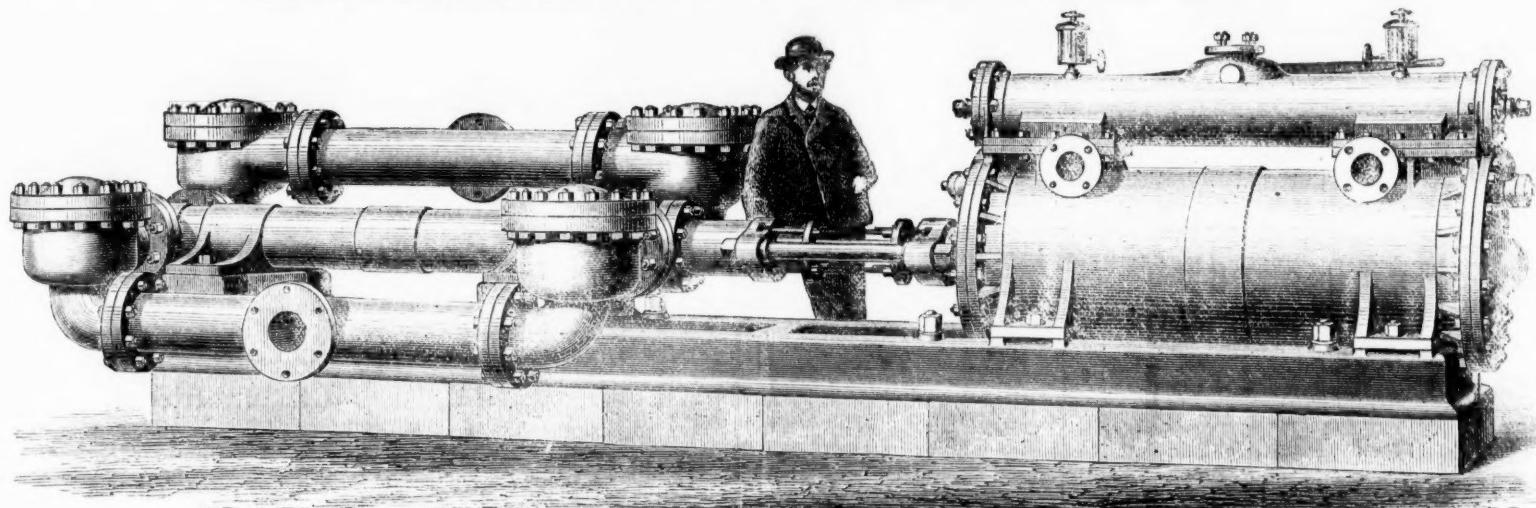


**THE HIGHEST PRIZE  
AND ONLY MEDAL "FOR PROGRESS"  
FOR DIRECT-ACTING  
STEAM PUMPING ENGINES**  
FOR MINING AND GENERAL PURPOSES, WAS  
AWARDED BY THE INTERNATIONAL JURY, AT VIENNA, 1873,



TO  
**TANGYE BROTHERS AND HOLMAN, LONDON,  
FOR  
"THE SPECIAL"  
DIRECT-ACTING STEAM PUMPS.**

OVER 3000 IN USE, AGGREGATING 25,000 HORSE-POWER. 200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.  
ALL ARE DOUBLE-ACTING, AND HAVE SHORT PISTONS AND LONG STROKES.



The "SPECIAL" Direct-acting Steam Pumping Engines require no costly Engine Houses or massive foundations, no repetition of Plunger Lifts, ponderous Connecting Rods, or complication of Pitwork, and allow a clear shaft for hauling purposes.

THE "SPECIAL" DIRECT-ACTING STEAM PUMPING ENGINE is the most simple, powerful, economical, and successful appliance for deep mine draining and general purposes of pumping ever practically developed, and the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fathom lifts. They are all fitted with Holman's Patent Buffer Valves, which are reliable and durable under 1500 feet head. Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

The "Special" Steam Pumping Engines are in use at the following among many other Collieries:—

Pumps supplied.	Pumps supplied.	Pumps supplied.	Pumps supplied.	Pumps supplied.	Pumps supplied.	Pumps supplied.	Pumps supplied.
Acomb	1	Caprington	1	Gnoll	1	Newton Cap	2
Adelaide	4	Castle Eden	4	Haswell	4	Shilbottle	3
Ashington	1	Chell	1	Nerquis	1	Slifdon	3
Bell Brothers	6	Cornsay	4	North Bitchburn	1	Shotton	3
Black Fell	1	Darfield Main	3	North Brancepeth	1	Silverdale	1
Black Prince	1	Denend	1	North Seaton	1	South Brenwell	5
Bolekov, Vaughan, and Co.	11	Dinnington	2	Old Flockton	2	St. John's	2
Brancepeth	1	Llancarach	2	Oakenshaw	1	Stratford	2
Brandon	1	Llynnvi	1	Old Thornley	1	Stanrigg	1
Briggs, H., Son and Co.	1	Drumgray	1	Pease's West	1	Sutton Heath	1
Brinckburn	1	Dunfermline	1	Pegswood	1	Thornley	3
Brownrigg	1	Duffryn	1	Pelton	1	Tindale	2
Bretby	1	Eckington	1	Marley Hill	1	Trimdon Grange	1
Bretby	2	Etherley	4	Milkwell Burn	2	Tudhoe	9
Butterknowle	3	Fell	3	Queensferry	2	Tudhoe Grange	2
Cambois	1	Findon Hill	3	Railey Fell	1	Worcester	4
Cambusnethan	1	George	1	New Brancepeth	3	Victoria	1
				Seaton Delaval	2	Workington	1
				Shire Oaks	2	Vobster and Mells	2

PARTICULARS OF THE "SPECIAL" STEAM PUMPING ENGINES SUITABLE FOR HIGH LIFTS IN MINES.

Diameter of Steam Cylinder	Inches	6	7	8	10	12	7	8	10	12	14	16	8	10	12	14	16	18	21	10	12	14	16	
Diameter of Water Cylinder	Inches	3	3	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6
Length of Stroke	Inches	24	24	24	36	36	24	24	24	36	36	48	24	24	36	48	48	48	48	24	24	36	36	36
Gallons per hour, approximate		2,200	2,200	2,200	2,200	2,200	3,900	3,900	3,900	3,900	3,900	6,100	6,100	6,100	6,100	6,100	6,100	8,800	8,800	8,800	8,800	8,800	8,800	
Height in feet to which water can be raised with 30 lbs. pressure per square inch of steam, or compressed air, at pump		180	244	319	500	720	137	180	281	405	551	720	115	180	259	352	461	581	793	124	180	247	320	
Ditto ditto at 40 lbs.		240	325	425	665	960	183	240	375	540	735	960	153	240	345	470	615	775	1,058	166	240	330	426	
Ditto ditto at 50 lbs.		300	406	531	831	1,200	228	300	468	675	918	1,200	191	300	431	587	768	968	1,322	207	300	412	532	

PARTICULARS, &c.—Continued.

Diameter of Steam Cylinder	Inches	18	21	24	26	12	14	16	18	21	24	26	30	14	16	18	21	24	26	30	32	16	18	
Diameter of Water Cylinder	Inches	6	6	6	6	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	
Length of Stroke	Inches	36	48	48	72	24	24	36	36	48	48	48	72	24	36	48	48	48	48	72	24	36	36	
Gallons per hour, approximate		8,800	8,800	8,800	8,800	11,900	11,900	11,900	11,900	11,900	11,900	11,900	15,660	15,660	15,660	15,660	15,660	15,660	15,660	15,660	15,660	15,660	19,800	
Height in feet to which water can be raised with 30 lbs. pressure per square inch of steam, or compressed air, at pump		405	555	720	855	135	180	234	300	405	525	620	825	137	180	225	310	405	475	630	720	142	180	
Ditto ditto at 40 lbs.		540	740	960	1,140	180	240	312	400	540	700	827	1,100	183	240	300	413	540	633	840	960	190	240	
Ditto ditto at 50 lbs.		675	925	1,200	1,425	225	300	390	500	675	875	1,033	1,375	228	300	375	516	675	791	1,050	1,200	237	300	

PARTICULARS, &c.—Continued.

Diameter of Steam Cylinder	Inches	21	24	26	30	32	18	21	24	26	30	32	18	21	24	26	30	32	21	24	26	30	32	
Diameter of Water Cylinder	Inches	9	9	9	9	10	10	10	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	
Length of Stroke	Inches	36	48	48	72	36	36	48	48	48	72	36	36	48	48	48	72	36	48	48	48	48	72	
Gallons per hour, approximate		19,800	19,800	19,800	19,800	24,400	24,400	24,400	24,400	24,400	24,400	24,400	35,240	35,240	35,240	35,240	35,240	35,240	47,960	47,960	47,960	47,960	47,960	
Height in feet to which water can be raised with 30 lbs. pressure per square inch of steam, or compressed air, at pump		244	320	375	500	568	146	198	258	303	405	468	101	137	180	211	281	320	101	127	150	206	234	
Ditto ditto at 40 lbs.		326	427	500	665	758	195	264	345	405	540	625	135	183	240	282	375	426	135	170	200	275	313	
Ditto ditto at 50 lbs.		407	533	625	831	947	243	330	431	506	675	781	168	228	300	352	468	532	168	212	250	343	391	

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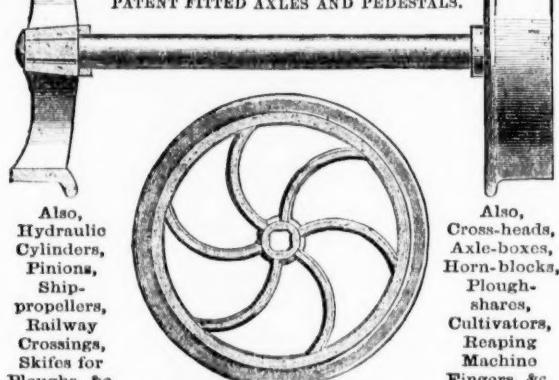
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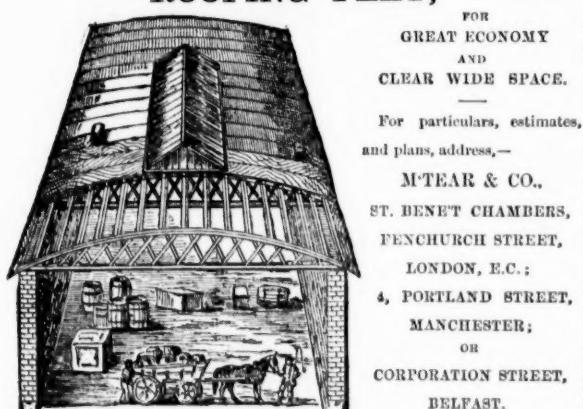
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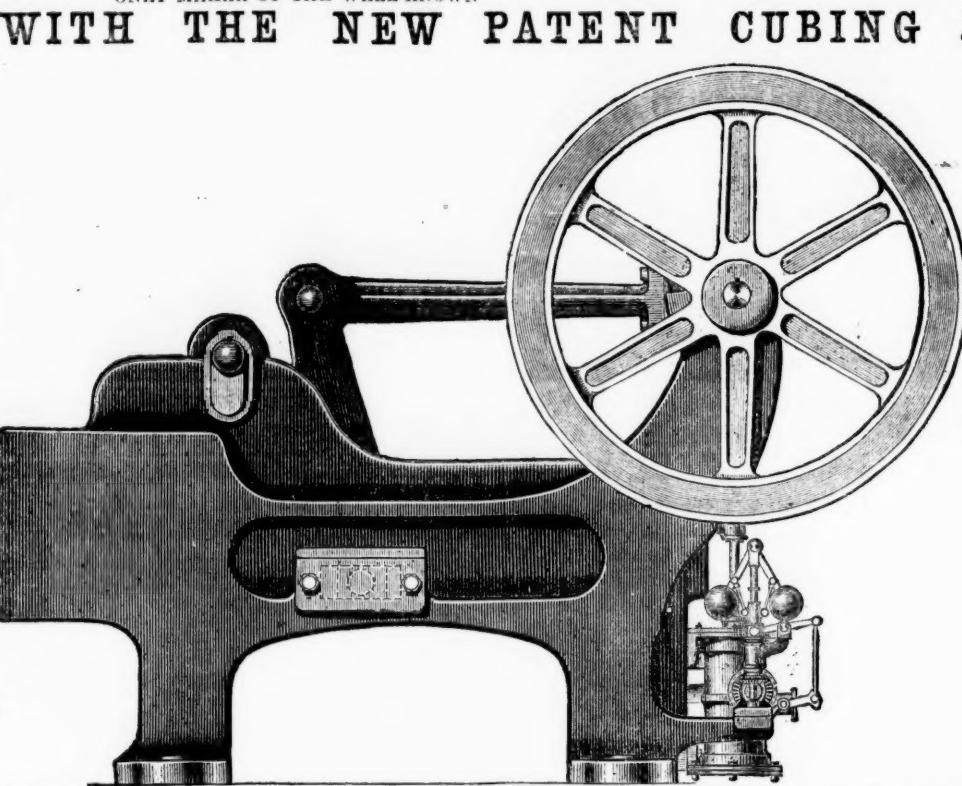


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W. and S. FIRTH undertake to CUT, economically, the hardest CANTEL, ANTHRACITE, SHALE, or ORDINARY COAL, ANY DEPTH, UP TO FIVE FEET.

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Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.

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Manufacture, in Galvanised and Corrugated Iron,

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